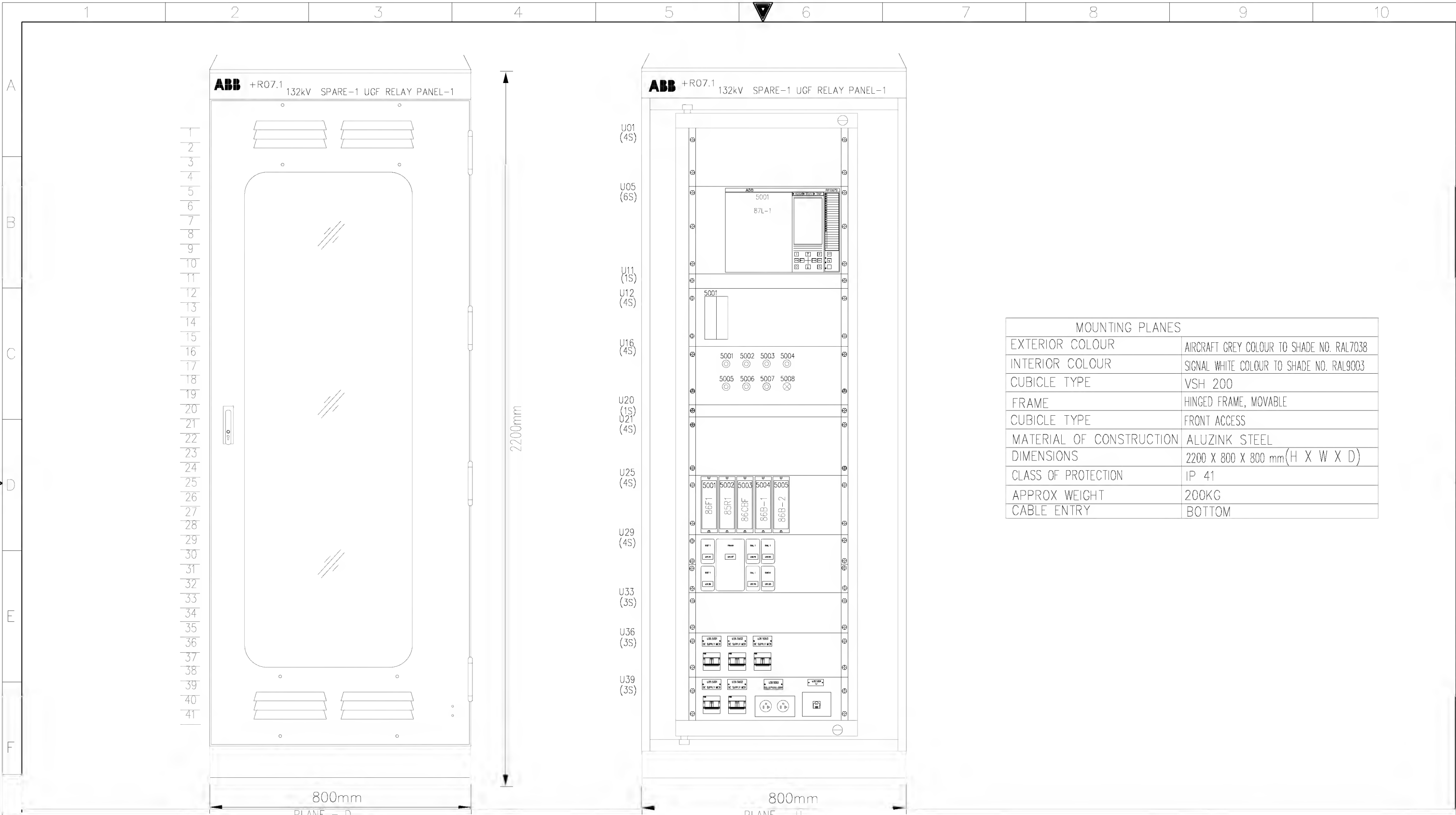
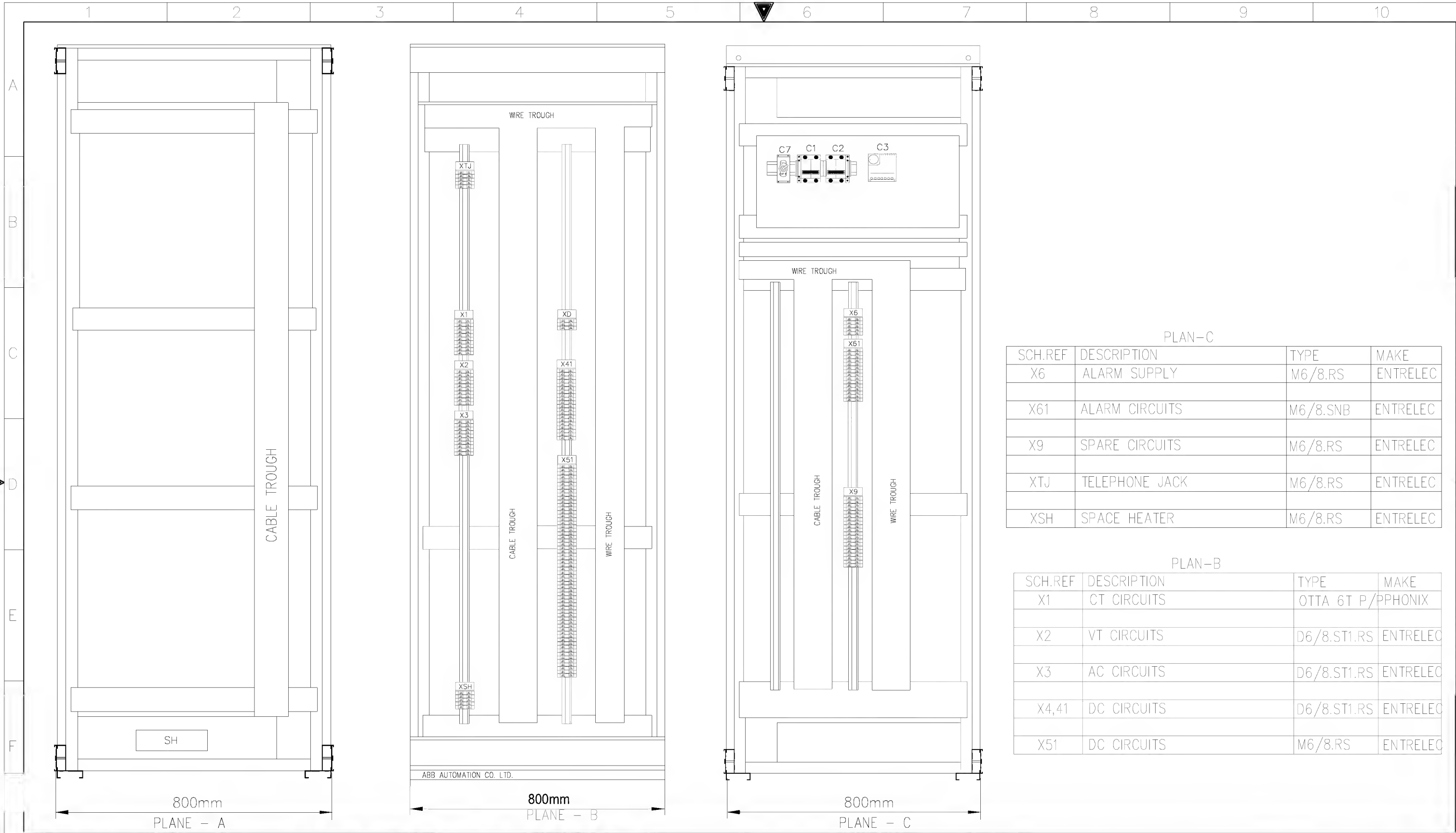


	1	2	3	4	5	6	7
A	<div><div>ABB</div><div>POWER SYSTEMS NETWORK MANAGEMENT PROTECTION AND SUBSTATION AUTOMATION SYSTEMS WBS NO: S-13656</div></div>						
B							
C	CONTRACTOR : ABB Contracting Company						
D	CLIENT : National GridSA						
E	PROJECT : CONSTRUCTION OF NEW 132/13.8kV SS 8						
F	SUBSTATION : S/S 8709						
	CONTRACT NO. : 11131113/00						
	TITLE : Assembly Drawing – +R07.1 [Under Gr						

G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656	COVER SHEET	
	01	13 49	FACTORY ASBUILT	DRAWN BY RIZ CHECKED BY KVR	132kV UGF-SPARE-1 RELAY PANEL-1+R07.1	
	00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013 DATE COMPLETED _____	S/S 8709-132/13.8KV IN AL-KHARJ CITY	
	REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC	RIYADH SAUDI ARABIA	



AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		ASSEMBLY DRAWING		<div>الشركة الوطنية لنقل الكهرباء</div> <div>National Grid sa</div>						
G	01	13 49	FACTORY ASBUILT		DRAWN BY RIZ CHECKED BY KVR		132kV UGF-SPARE-1 RELAY PANEL-1+R07.1								
	00	13 04			DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY								
REV. NO.		DATE	DESCRIPTION		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA		INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.		REV. NO.
									-	C421	CD-322923		G01	G02	01



PLAN-C

SCH.REF	DESCRIPTION	TYPE	MAKE
X6	ALARM SUPPLY	M6/8.RS	ENTRELEC
X61	ALARM CIRCUITS	M6/8.SNB	ENTRELEC
X9	SPARE CIRCUITS	M6/8.RS	ENTRELEC
XTJ	TELEPHONE JACK	M6/8.RS	ENTRELEC
XSH	SPACE HEATER	M6/8.RS	ENTRELEC

PLAN-B

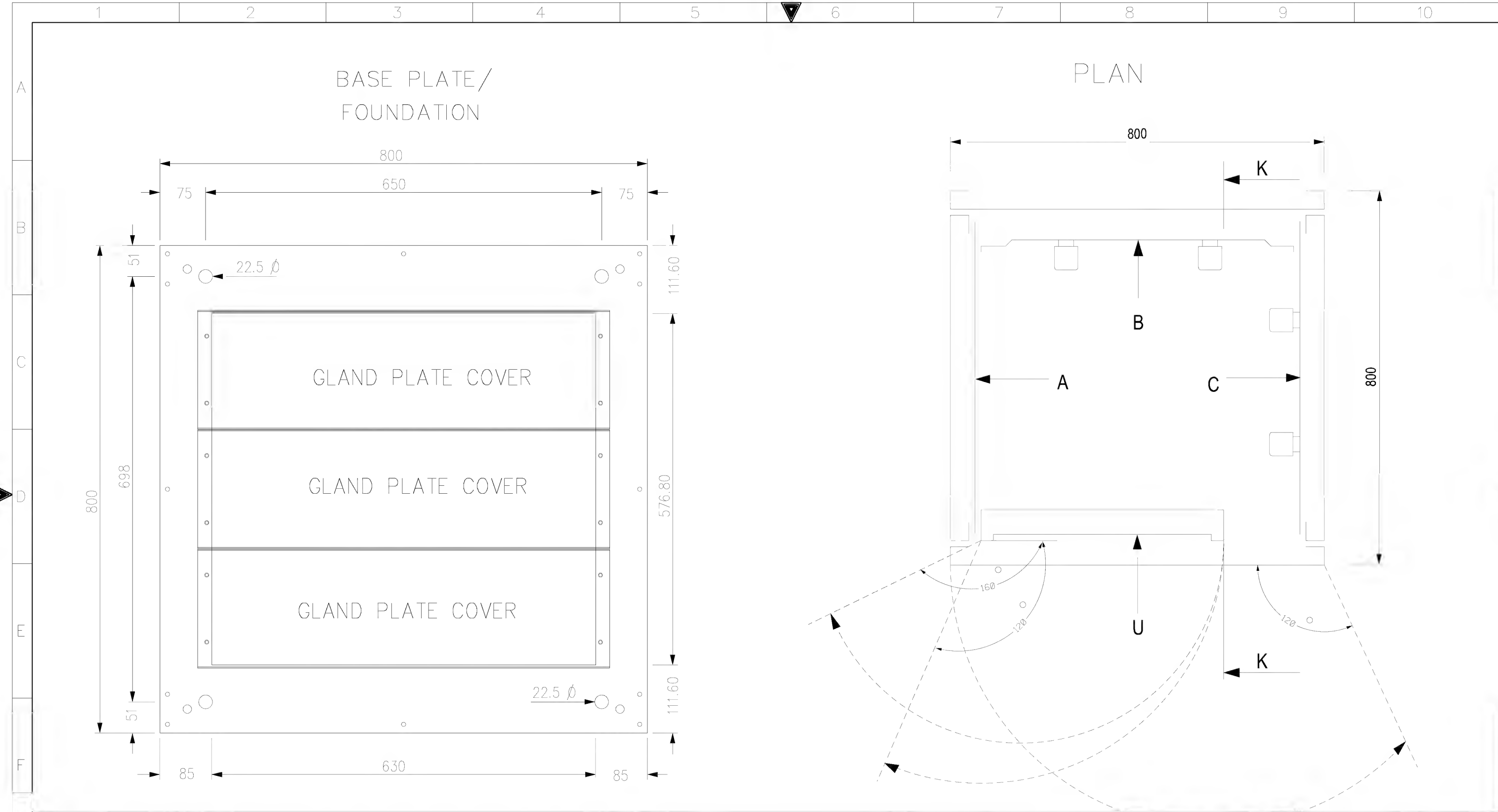
SCH.REF	DESCRIPTION	TYPE	MAKE
X1	CT CIRCUITS	OTTA 6T P/	PPHONIX
X2	VT CIRCUITS	D6/8.ST1.RS	ENTRELEC
X3	AC CIRCUITS	D6/8.ST1.RS	ENTRELEC
X4,41	DC CIRCUITS	D6/8.ST1.RS	ENTRELEC
X51	DC CIRCUITS	M6/8.RS	ENTRELEC

AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

01	13 49	FACTORY ASBUILT	DRAWN BY RIZ	CHECKED BY KVR
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013	DATE COMPLETED _____
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC

ASSEMBLY DRAWING
132kV UGF-SPARE-1 RELAY PANEL-1+R07.1
S/S 8709-132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء National Grid sa				
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-322923	G02 G03	01



AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

01	13 49	FACTORY ASBUILT	DRAWN BY RIZ	CHECKED BY KVR
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013	DATE COMPLETED
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC

ASSEMBLY DRAWING
132kV UGF-SPARE-1 RELAY PANEL-1+R07.1
S/S 8709-132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء National Grid sa				
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-322923	G03G04	01

A

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C

D

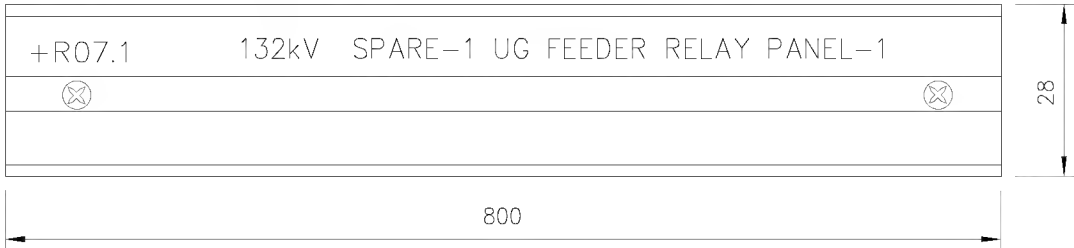
E

F



TOP VIEW FOR EARTHING BAR

U PLANE TOP LABEL



U PLANE BOTTOM LABEL



MANUFACTURING LABEL

ABB
ABB Automation Co.Ltd.

PROJECT : National Grid SA
S/S 8709

ORDER REFERENCE : 2875 RF S13656


YEAR OF MANUFACTURE: 2013


PANEL NO. : +R07.1


DRAWING NO. : S13656-CD-323925

MADE IN THE KINGDOM OF SAUDI ARABIA

G

AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		ASSEMBLY DRAWING			<div>الشركة الوطنية لنقل الكهرباء</div> <div> نقل الكهرباء National Grid sa</div>						
01	13 49	FACTORY ASBUILT	DRAWN BY _____ RIZ _____		CHECKED BY _____ KVR _____		132kV UGF-SPARE-1 RELAY PANEL-1+R07.1			INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.		REV. NO.
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013		DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY			-	C421	CD-322923		SHT	CONT.	01
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. _____ CTPD _____		ENG. DEPT. _____ AUT-PSAC _____		RIYADH SAUDI ARABIA							G04	L00	

	1	2	3	4	5	6	7	8	9	10
A			POWER SYSTEMS NETWORK MANAGEMENT PROTECTION AND SUBSTATION AUTOMATION SYSTEMS WBS NO: S-13656					ABB AUTOMATION COMPANY LTD., 414, AL-KHARJ ROAD SECOND INDUSTRIAL CITY RIYADH-11383 K.S.A		
B										
C										
D	CONTRACTOR : ABB Contracting Company									
	CLIENT : National Gridsa									
	PROJECT : CONSTRUCTION OF NEW 132/13.8kV SS 8709 IN AL-KHARJ CITY									
	SUBSTATION : S/S 8709									
E	CONTRACT NO. : 11131113/00									
F	TITLE : LIST OF APPARATUS +R07.1 [Under Ground Feeder]									

G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656	COVER SHEET		 نقل الكهرباء الشركة الوطنية لنقل الكهرباء National Grid sa				
	01	13 49	FACTORY ASBUILT	DRAWN BY RIZ	CHECKED BY KVR	132kV UGF-SPARE-1 RELAY PANEL-1+R07.1	INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
	00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013	DATE COMPLETED	S/S 8709-132/13.8KV IN AL-KHARJ CITY	-	C421	CD-322923	SHT L00	CONT. L01
	REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC	RIYADH SAUDI ARABIA					01

	1	2	3	4	5	6	7	8	9	10				
A	SR. NO.	GA. REF.	SCH. REF.	DESCRIPTION		SHT.	QTY.	TYPE	MAKE	ORDERING INFORMATION	COUNTRY OF ORIGIN			
				RELAY CUBICLE- +R07.1 ACCOMODATING THE FOLLOWING			1	VSH 200	ABB					
	1	U05.5001	87L-1	NUMERICAL DIFF PROTECTION TERMINAL WITH THE FOLLOWING		298	1	RED 670	ABB	1MRK 004 810-DC	SWEDEN			
B				FEATURES :		298A								
				ANALOG MODULE(6I+6U)		299								
				RATED POWER SUPPLY MODULE : (90-250V)DC										
				BINARY I/P MODULE -1NO										
				BINARY O/P MODULE-1NO										
				OPTICAL ETHERNET MODULE IEC 61850-8-1/100 BASE FX CHANNEL GLASS										
				MEDIUM GRAPHIC HMI,15 CONTROLLABLE OBJECTS,1X 19"										
C	2	U12.5001	TS-1	TEST SWITCH FOR RED 670 RELAY		224	1	RTXP24	ABB	RK 926 315-AC				
	3	U16.5001	S86F1	PUSH BUTTON FOR 86CBF & 86F1 TRIP RELAY RESET PB		232	2	MP1-10B	ABB	1SFA 611 100 R1006	SWEDEN			
		U16.5002	S86CBF	BUTTON COLOUR : BLACK				MCBH-20		1SFA 611 605 R1102				
D				CONTACT DATA : 1NO+1NC										
	4	U16.5003	S86B-1	PUSH BUTTON FOR 86B & LT TRIP RELAY RESET PB		232	3	MP1-10B	ABB	1SFA 611 100 R1006	SWEDEN			
		U16.5004	S86B-2	BUTTON COLOUR : BLACK				MCBH-20		1SFA 611 605 R1102				
		U16.5005	LT	CONTACT DATA : 1NO+1NC										
	5	U16.5006	S01	PUSH BUTTON FOR PROTECTION IN		232	1	MP1-10B	ABB	1SFA 611 100 R1006	SWEDEN			
				BUTTON COLOUR : BLACK				MCBH-20		1SFA 611 605 R1102				
E				CONTACT DATA : 1NO+1NC										
	6	U16.5007	S02	PUSH BUTTON FOR PROTECTION OUT		232	1	MP1-10B	ABB	1SFA 611 100 R1006	SWEDEN			
				BUTTON COLOUR : BLACK				MCBH-20		1SFA 611 605 R1102				
				CONTACT DATA : 1NO+1NC										
	7	U16.5008	L01	INDICATION LAMP FOR FPFM OUT		277	1	MC1-10010	ABB	1SFA 611 400 R1003				
				LENS : WHITE				MCBH-003		1SFA 611 605 R1400	SWEDEN			
F				LED RATING : 110-130V,4-6MA				KA2-2145		1SFA 616 921 R2145				
				HOLDER RATING : 130V WITH RESISTORS DIODEBLOCK										
G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		LIST OF APPARATUS		الشركة الوطنية لنقل الكهرباء National Grid sa					
	01	13 49	FACTORY ASBUILT		DRAWN BY RIZ CHECKED BY KVR		132kV UGF-SPARE-1 RELAY PANEL-1+R07.1		INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.	
	00	13 04	FOR APPROVAL		DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		-	C421	CD-322923	SHT L01	CONT. L02	01
	REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. CTFD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA							

NG/D2-D (2012/01)

DMS VECTOR

NGD200

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	1	2	3	4	5	6	7	8	9	10	
A	SR. NO.	GA. REF.	SCH. REF.	D E S C R I P T I O N		SHT.	QTY.	TYPE	MAKE	ORDERING INFORMATION	COUNTRY OF ORIGIN
	8	U25.5001	86F1	HIGH BURDEN TYPE HAND/ELECTRICAL RESET TRIP RELAY		232	1	MVAJ105	ALSTOM	MVAJ105RA0802A	UK
				AUXILIARY VOLTAGE : 110 - 125V DC							
				OUTPUT CONTACTS : 8NO+2NC							
B				OPERATION INDICATOR : HAND RESET FLAG							
	9	U25.5002	85R1	HIGH BURDEN TYPE SELF RESET TRIP RELAY		233	1	MVAJ101	ALSTOM	MVAJ101RA0800A	UK
				AUXILIARY VOLTAGE : 110 - 125V DC							
				OUTPUT CONTACTS : 10 NO							
C				OPERATION INDICATOR : SELF RESET FLAG							
	10	U25.5003	86CBF	HIGH BURDEN TYPE HAND/ELECTRICAL RESET TRIP RELAY		276	1	MVAJ105	ALSTOM	MVAJ105RA0802A	UK
				AUXILIARY VOLTAGE : 110 - 125V DC							
				OUTPUT CONTACTS : 8NO+2NC							
D				OPERATION INDICATOR : HAND RESET FLAG							
	11	U25.5004	86B-1	HIGH BURDEN TYPE HAND/ELECTRICAL RESET TRIP RELAY		276	1	MVAJ105	ALSTOM	MVAJ105RA0802A	UK
				AUXILIARY VOLTAGE : 110 - 125V DC							
				OUTPUT CONTACTS : 8NO+2NC							
E				OPERATION INDICATOR : HAND RESET FLAG							
	12	U25.5005	86B-2	HIGH BURDEN TYPE HAND/ELECTRICAL RESET TRIP RELAY		277	1	MVAJ105	ALSTOM	MVAJ105RA0802A	UK
				AUXILIARY VOLTAGE : 110 - 125V DC							
				OUTPUT CONTACTS : 8NO+2NC							
F				OPERATION INDICATOR : HAND RESET FLAG							
G											
AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		LIST OF APPARATUS		الشركة الوطنية لنقل الكهرباء National Grid sa			
13 49		DRAWN BY RIZ CHECKED BY KVR		DATE STARTED 24.01.2013 DATE COMPLETED _____		132kV UGF-SPARE-1 RELAY PANEL-1+R07.1		INDEX PLANT NO. DRAWING NUMBER SHEET NO. REV. NO.			
00 13 04 FOR APPROVAL		OPRG. DEPT. CTPC ENG. DEPT. AUT-PSAC				S/S 8709-132/13.8KV IN AL-KHARJ CITY		- C421 CD-322923 L02 L03 01			
REV. NO. DATE DESCRIPTION						RIYADH SAUDI ARABIA		NG/D2-D (2012/01) DMS VECTOR NGD200			

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LABEL REF.	LABEL ENCRAVING	MATERIALS	ENCRAVING	LABEL SIZE	LETTER SIZE
U05.5001	U05.5001 87L-1	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U12.5001	U12.5001 TS-1	ALUMINUM PAPER FOIL	BLACK LETTERS	50X15mm	4mm
U16.5001	U16.5001 S86F1	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U16.5002	U16.5002 S86CBF	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U16.5003	U16.5003 S86B-1	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U16.5004	U16.5004 S86B-2	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X10mm	3mm
U16.5005	U16.5005 LT	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X10mm	4mm
U16.5006	U16.5006 S01	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U16.5007	U16.5007 S02	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X10mm	4mm
U16.5008	U16.5008 L01	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X10mm	4mm
U25.5001	U25.5001 86F1	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U25.5002	U25.5002 85R1	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U25.5003	U25.5003 86CBF	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U25.5004	U25.5004 86B-1	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U25.5005	U25.5005 86B-2	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U29.101	U29.101 74R1/74IT1	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U29.301	U29.301 74RS/74IS	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U29.107	U29.107 K01M	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U29.119	U29.307 TMR/86BF1	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U29.319	U29.319 TMR/86B-1	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U29.125	U29.125 TMR/86B-2	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U29.325	U29.325 R1	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U29.131	U29.131 R2	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm

G

AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		LIST OF APPARATUS		<div>الشركة الوطنية لنقل الكهرباءNational Grid sa</div>									
01 13 49			DRAWN BY RIZ		CHECKED BY KVR		132kV UGF-SPARE-1 RELAY PANEL-1+R07.1		INDEX		PLANT NO.		DRAWING NUMBER		SHEET NO.		REV. NO.	
00 13 04			DATE STARTED 24.01.2013		DATE COMPLETED		S/S 8709-132/13.8KV IN AL-KHARJ CITY		-		C421		CD-322923		SHT		CONT.	
REV. NO. DATE DESCRIPTION			OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA								L06		L07	
																	01	


1	2	3	4	5	6	7	8	9	10
A									
B									
C									
D									
E									
F									


LABEL REF.	LABEL ENGRAVING	MATERIALS	ENGRAVING	LABEL SIZE	LETTER SIZE
C1	C1 127V AC SUPPLY MCB	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
C2	C2 220V AC SUPPLY MCB	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
C3	C3 THERMOSTAT	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
C7	C7 ON/OFF SWITCH	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
DS	DS DOOR SWITCH	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
IL	IL ILLUMINATION LAMP	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
SH	SH SPACE HEATER	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U39.5001	U39.5001 Q1	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U39.5002	U39.5002 Q2	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U39.5003	U39.5003 C01/C02	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U39.5004	U39.5004 TJ	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U36.5001	U36.5001 Q3	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U36.5002	U39.5002 Q4	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U36.5003	U36.5003 Q5	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm

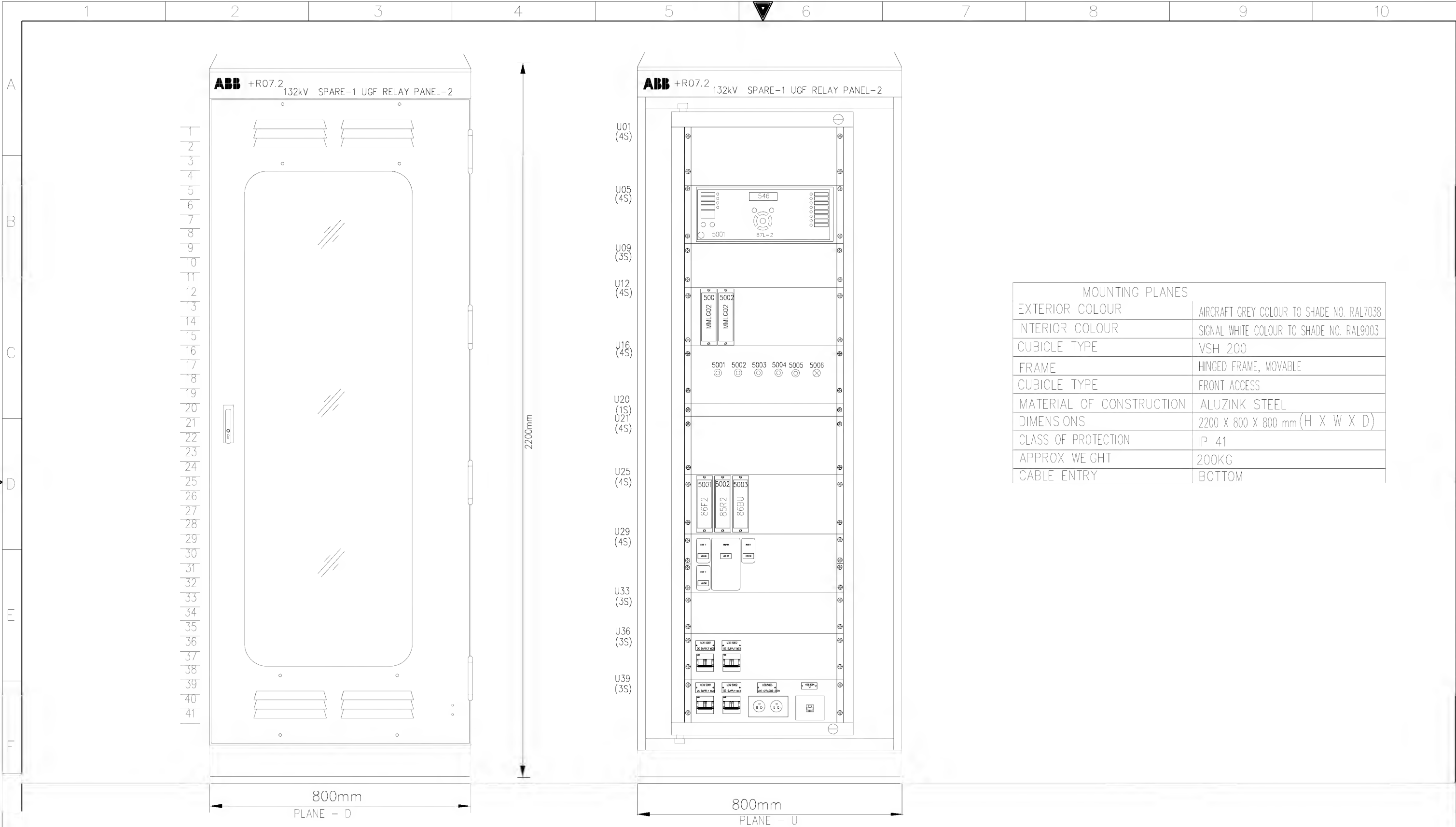
AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656
01	13 49	FACTORY ASBUILT	DRAWN BY RIZ CHECKED BY KVR
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013 DATE COMPLETED _____
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC


LIST OF APPARATUS	
132kV UGF-SPARE-1 RELAY PANEL-1+R07.1	
S/S 8709-132/13.8KV IN AL-KHARJ CITY	
RIYADH	SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء		National Grid sa		
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-322923	L07	01
			CONT.	
			NIL	

	1	2	3	4	5	6	7	8	9	10
A			POWER SYSTEMS NETWORK MANAGEMENT PROTECTION AND SUBSTATION AUTOMATION SYSTEMS WBS NO: S-13656					ABB AUTOMATION COMPANY LTD., 414, AL-KHARJ ROAD SECOND INDUSTRIAL CITY RIYADH-11383 K.S.A		
B										
C	CONTRACTOR : ABB Contracting Company									
	CLIENT : National Gridsa									
D	PROJECT : CONSTRUCTION OF NEW 132/13.8kV SS 8709 IN AL-KHARJ CITY									
	SUBSTATION : S/S 8709									
E	CONTRACT NO. : 11131113/00									
F	TITLE : Assembly Drawing +R07.2 [Under Ground Feeder]									

G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656	COVER SHEET		 نقل الكهرباء الشركة الوطنية لنقل الكهرباء National Grid sa				
	01	13 49	FACTORY ASBUILT	DRAWN BY RIZ	CHECKED BY KVR	132kV UGF-SPARE-1 RELAY PANEL-2+R07.2	INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
	00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013	DATE COMPLETED	S/S 8709-132/13.8KV IN AL-KHARJ CITY	-	C421	CD-322924	SHT G00	CONT. G01
	REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC	RIYADH SAUDI ARABIA					01



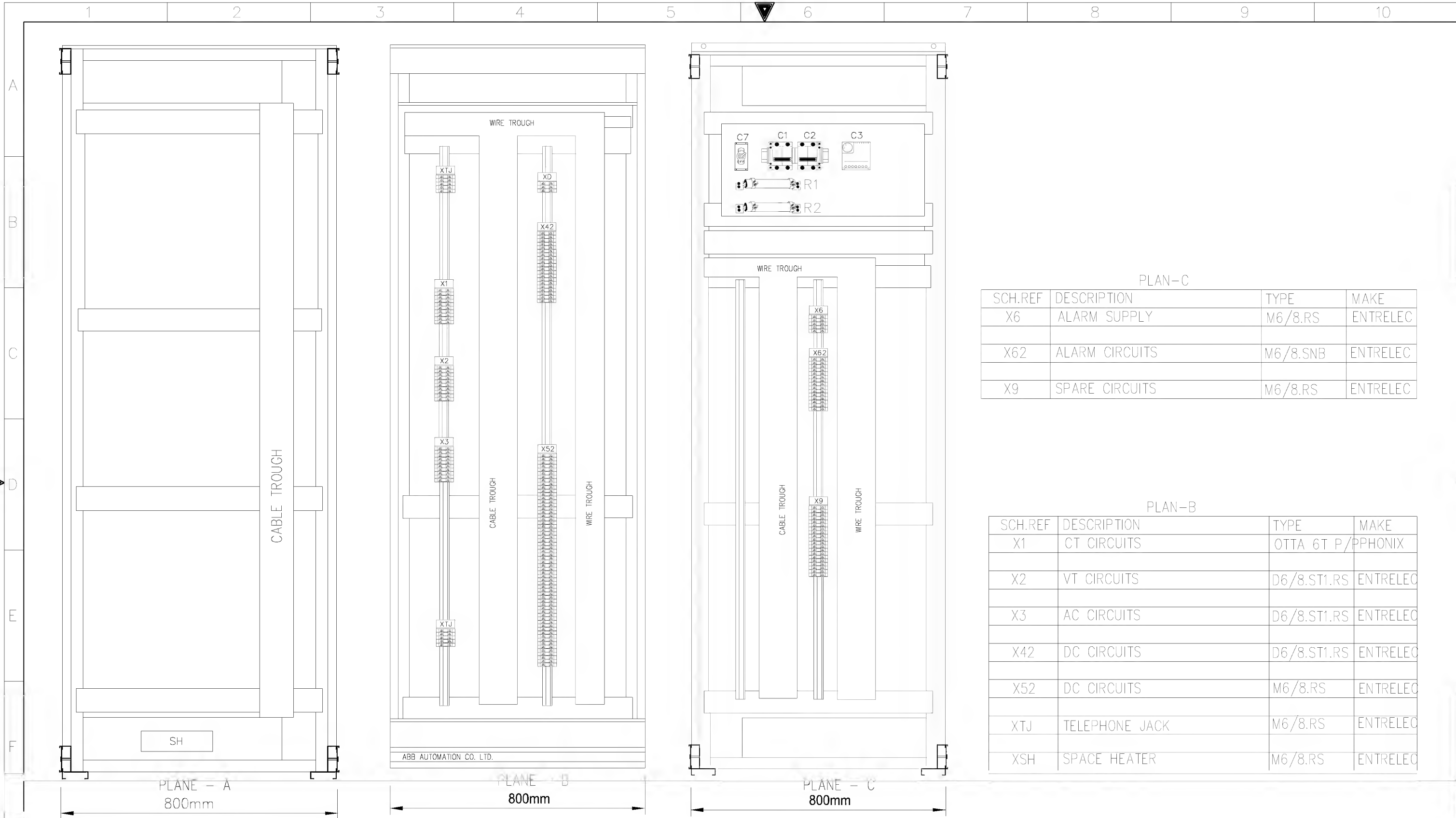
AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		ASSEMBLY DRAWING		الشركة الوطنية لنقل الكهرباء		 نقل الكهرباء National Grid sa	
01 13 49			FACTORY ASBUILT		DRAWN BY RIZ CHECKED BY KVR		132kV UGF-SPARE-1 RELAY PANEL-2+R07.2					
00 13 04			FOR APPROVAL		DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX		PLANT NO.	
REV. NO.			DATE		DESCRIPTION		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		-		C421	
							RIYADH SAUDI ARABIA		CD-322924		SHEET NO.	
									G01		G02	
									01		REV. NO.	

NG/D2-D (2012/01)

DMS


VECTOR

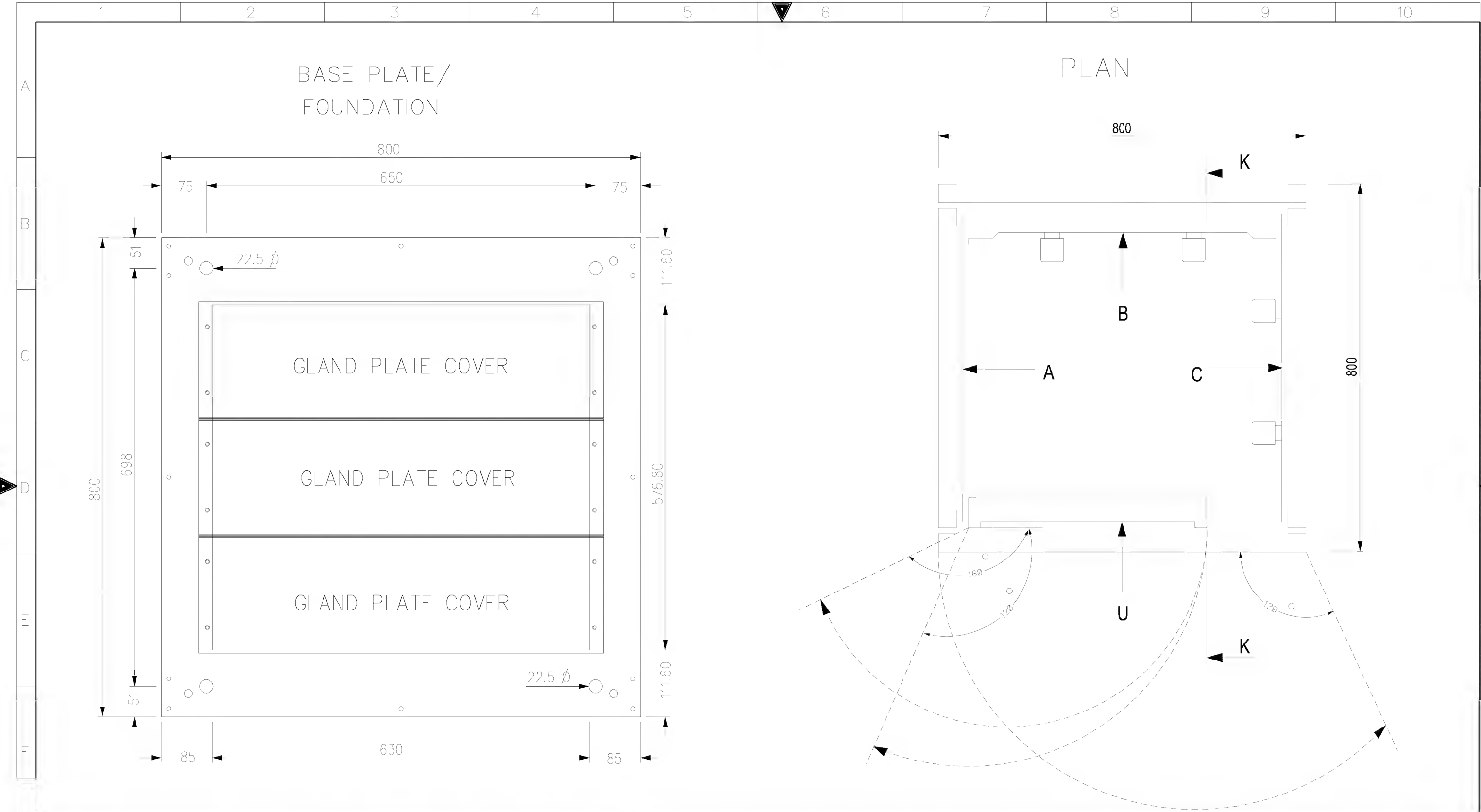
NGD200



PLAN-C			
SCH.REF	DESCRIPTION	TYPE	MAKE
X6	ALARM SUPPLY	M6/8.RS	ENTRELEC
X62	ALARM CIRCUITS	M6/8.SNB	ENTRELEC
X9	SPARE CIRCUITS	M6/8.RS	ENTRELEC

PLAN-B			
SCH.REF	DESCRIPTION	TYPE	MAKE
X1	CT CIRCUITS	OTTA 6T P/PPHONIX	
X2	VT CIRCUITS	D6/8.ST1.RS	ENTRELEC
X3	AC CIRCUITS	D6/8.ST1.RS	ENTRELEC
X42	DC CIRCUITS	D6/8.ST1.RS	ENTRELEC
X52	DC CIRCUITS	M6/8.RS	ENTRELEC
XTJ	TELEPHONE JACK	M6/8.RS	ENTRELEC
XSH	SPACE HEATER	M6/8.RS	ENTRELEC

G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		ASSEMBLY DRAWING		الشركة الوطنية لنقل الكهرباء		 نقل الكهرباء National Grid sa				
	01	13 49	FACTORY ASBUILT FOR APPROVAL		DRAWN BY RIZ CHECKED BY KVR		132kV UGF-SPARE-1 RELAY PANEL-2+R07.2		INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.		REV. NO.
	00	13 04			DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		-	C421	CD-322924		SHT	CONT.	01
	REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC	RIYADH SAUDI ARABIA						G02	G03		



AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

01	13 49	FACTORY ASBUILT
00	13 04	FOR APPROVAL
REV. NO.	DATE	DESCRIPTION

DRAWN BY RIZ CHECKED BY KVR
DATE STARTED 24.01.2013 DATE COMPLETED _____
OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC

ASSEMBLY DRAWING

132kV UGF-SPARE-1 RELAY PANEL-2+R07.2
S/S 8709-132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء



INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-322924	SHT CONT.	01
			G03G04	

NG/D2-D (2012/01)

DMS

VECTOR

NGD200

A

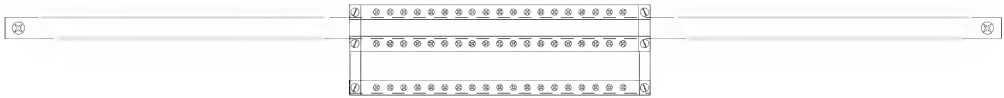
B

C

D

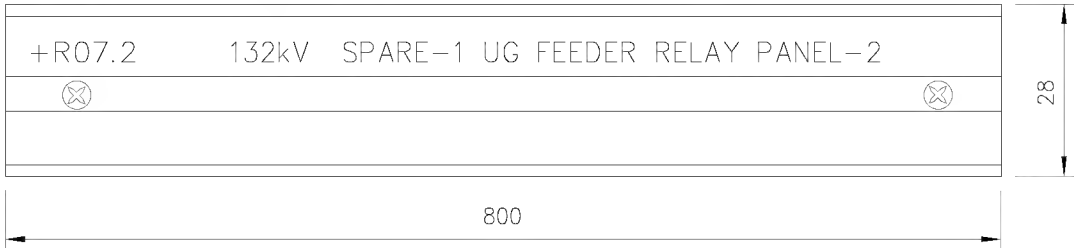
E

F



TOP VIEW FOR EARTHING BAR

U PLANE TOP LABEL



U PLANE BOTTOM LABEL



MANUFACTURING LABEL

ABB

ABB Automation Co.Ltd.

PROJECT :

National Grid SA
S/S 8709

ORDER REFERENCE :

2875 RF S13656

YEAR OF MANUFACTURE:

2013

PANEL NO. :

+R07.2

DRAWING NO. :


S13656-CD-323925


MADE IN THE KINGDOM OF SAUDI ARABIA

AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656	
01	13 49	FACTORY ASBUILT	DRAWN BY RIZ		CHECKED BY KVR	
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013		DATE COMPLETED _____	
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC	


ASSEMBLY DRAWING	
132kV UGF-SPARE-1 RELAY PANEL-2+R07.2	
S/S 8709-132/13.8KV IN AL-KHARJ CITY	
RIYADH	SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء			 نقل الكهرباء		
			National Grid sa		
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.		REV. NO.
-	C421	CD-322924	SHT	CONT.	01
			G04	L00	

	1	2	3	4	5	6	7	8	9	10
A			POWER SYSTEMS NETWORK MANAGEMENT PROTECTION AND SUBSTATION AUTOMATION SYSTEMS WBS NO: S-13656					ABB AUTOMATION COMPANY LTD., 414, AL-KHARJ ROAD SECOND INDUSTRIAL CITY RIYADH-11383 K.S.A		
B										
C	CONTRACTOR : ABB Contracting Company									
	CLIENT : National Gridsa									
D	PROJECT : CONSTRUCTION OF NEW 132/13.8kV SS 8709 IN AL-KHARJ CITY									
	SUBSTATION : S/S 8709									
E	CONTRACT NO. : 11131113/00									
F	TITLE : LIST OF APPARATUS +R07.2 [Under Ground Feeder]									

G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656	COVER SHEET		 نقل الكهرباء الشركة الوطنية لنقل الكهرباء National Grid sa				
	01	13 49	FACTORY ASBUILT	DRAWN BY RIZ	CHECKED BY KVR	132kV UGF-SPARE-1 RELAY PANEL-2+R07.2	INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
	00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013	DATE COMPLETED	S/S 8709-132/13.8KV IN AL-KHARJ CITY	-	C421	CD-322924	SHT L00	CONT. L01
	REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC	RIYADH SAUDI ARABIA					01

1	2	3	4	5	6	7	8	9	10	
SR. NO.	LOC. REF	SCH. REF.	D E S C R I P T I O N		SHT	QTY.	TYPE	MAKE	ORD INFORMATION	COUNRTY OF ORIGIN
			RELAY CUBICLE- +R07.2 ACCOMODATING THE FOLLOWING			1				
A	1	U05.5001	87L-2	NUMERICAL HIGH SPEED CURRENT DISTANCE PROTECTION	498	1	P546	ALSTOM	P54631NK6M0710M	UK
				VERSION : 1 & 3 POLE TRIPPING/RECLOSING MHO/QUAD CHAR						
				AUX : 110V-250V DC : 100-120V						
				In/Vn : DUAL RATED CT (1/5A)						
B				HARDWARE : EHTHER NET (100mbits) PLUS irig-b modulated						
				PRODUCT OPTION : CH1-1300nm SINGLE MODE						
				CH2-1300nm SINGLE MODE						
				PROTOCOL OPTION : IEC61850+COURIER VIA REAR RS485 PORT						
C				MOUNTING : 19" RACK,2A LOGICAL INPUTS,32 RELAY OUT PUTS						
				LANGUAGE : ENGLISH						
				SOFTWARE : 71						
	2	U12.5001	TS-1	TEST SWITCH FOR P546 RELAY	422	2	MMLG02	ALSTOM	MMLG02 R1AA 0001E	UK
D		U12.5002	TS-2							
	3	U16.5001	S03	PUSH BUTTON FOR FPSM IN SELECTION	432	1	MP1-10B	ABB	1SFA 611 100 R1006	SWEDEN
				BUTTON COLOUR : BLACK			MCBH-20		1SFA 611 605 R1102	
				CONTACT DATA : 1NO + 1NC						
E	4	U16.5002	S04	PUSH BUTTON FOR FPSM OUT SELECTION	432	1	MP1-10B	ABB	1SFA 611 100 R1006	SWEDEN
				BUTTON COLOUR : BLACK			MCBH-20		1SFA 611 605 R1102	
				CONTACT DATA : 1NO + 1NC						
	5	U16.5003	S86BU	PUSH BUTTON FOR 86BU RESET	443	1	MP1-10B	ABB	1SFA 611 100 R1006	SWEDEN
F				BUTTON COLOUR : BLACK			MCBH-20		1SFA 611 605 R1102	
				CONTACT DATA : 1NO + 1NC						
	6	U16.5004	S86F2	PUSH BUTTON FOR 86F2 RESET	432	1	MP1-10B	ABB	1SFA 611 100 R1006	SWEDEN
				BUTTON COLOUR : BLACK			MCBH-20		1SFA 611 605 R1102	
				CONTACT DATA : 1NO + 1NC						
	7	U16.5005	LT	PUSH BUTTON FOR 86F2 RESET	431	1	MP1-10B	ABB	1SFA 611 100 R1006	SWEDEN
				BUTTON COLOUR : BLACK			MCBH-20		1SFA 611 605 R1102	
				CONTACT DATA : 1NO + 1NC						
	8	U16.5006	L01	INDICATION LAMP OUT	431	1	MC1-100W	ABB	1SFA 611 400 R1003	SWEDEN
				LENS : WHITE			MCBH-003		1SFA 611 605 R1400	
				LENS RATING 110-130V,4-6MA			KA2-2145		1SFA 616 921 R2145	
				HOLDER RATING :130V WITH RESISTORS DIODE BLOCK						

AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		COVER SHEET		الشركة الوطنية لنقل الكهرباء		 نقل الكهرباء National Grid sa	
01 13 49			DRAWN BY RIZ		CHECKED BY KVR		132kV UGF-SPARE-1 RELAY PANEL-2+R07.2		INDEX		PLANT NO.	
00 13 04			DATE STARTED 24.01.2013		DATE COMPLETED		S/S 8709-132/13.8KV IN AL-KHARJ CITY		DRAWING NUMBER		SHEET NO.	
FOR APPROVAL			OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA		CD-322924		REV. NO.	
DESCRIPTION									- C421		01	
											01	

DMS

VECTOR

NGD200

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	1	2	3	4	5	6	7	8	9	10				
A	SR. NO.	GA REF.	SCH. REF.	D E S C R I P T I O N		SHEET NO.	QTY.	TYPE	MAKE	ORDERING INFORMATION	COUNTRY OF ORIGIN			
	15			MCB 2 POLE 6A, FOR DC SUPPLY WITH 2NC AUXILIARY CONTACT		416	4	S 282 UC-K6 S2-H02	ABB	GH S282 0164 R0377 GH S270 1916 R0003	GERMANY			
		U39.5001	Q1	Q1 R2± SUPPLY										
		U39.5002	Q2	Q2 R3 ± SUPPLY										
B		U36.5001	Q3	Q3 IT2+ SUPPLY										
		U36.5002	Q4	Q4 TC2 + SUPPLY										
	16	U39.5003	C01	CONVENIENCE OUTLET 10A, 127V AC		411	1	USM45 & USMS45	LEGRAND	74140 & 74180	FRANCE			
			C02	CONVENIENCE OUTLET 10A, 220V AC										
C			C1,C2	MINIATURE CIRCUIT BREAKER, 2 POLE, 10A FOR CONVENIENCE OUTLET WITH AUXILIARY SWITCH, 1NO + 1NC CONTACTS		411	2	S202P-K10 S2C-H11L	ABB	2CDS 253 001 R0104 2CDS 200 936 R0001	GERMANY			
	17		C3	THERMOSTAT FOR SPACE HEATER, 5-60° C		411	1	SK 3110	RITTAL	SK 3110	THIWAN			
	18	U39.5004	TJ	TELEPHONE JACK 1GANG 4WIRE		411	1	EDF410	EDISON	EDF410	SWEDEN			
	19		C7	ON/OFF SWITCH FOR SPACE HEATER		411	1	M2SS1-10B MCBH-10	ABB	1SFA 611 200 R1006 1SFA 611 605 R1101				
D	20		DS	DOOR SWITCH FOR CONTROL OF CUBICLE INTERNAL ILLUMINATION LAMP		411	1	LS30PKB1302	ABB	1SBV 010213 R1202	SWEDEN			
	21		IL	INTERNAL ILLUMINATION CUBICLE LAMP SUITABLE FOR 127V AC, 60Hz SUPPLY, 20W		411	1	T-4	SUNON	SP-20W				
	22		SH	SPACE HEATER, 150W, 120V, 60Hz		411	1	RICA	GRUPPO	1FZEK 006 C001	ITALY			
	23		R1	FIXED RESISTOR FOR TRIP CIRCUIT SUPERVISION CKT.		491	2	GRF 30/200	DANOTHERM	GRF 30/200	GERMANY			
E			R2	2.5Kohm,15W										
F														
G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		LIST OF APPARATUS		الشركة الوطنية لنقل الكهرباء National Grid sa					
	01	13 49	FACTORY ASBUILT		DRAWN BY RIZ CHECKED BY KVR		132kV UGF-SPARE-1 RELAY PANEL-2+R07.2		INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.	
	00	13 04	FOR APPROVAL		DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		-	C421	CD-322924	SHT L04	CONT. L05	01
	REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA							

NG/D2-D (2012/01)

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SR. NO.	ITEM DESIGNATION	D E S C R I P T I O N	SHEET.NO.	QTY.	TYPE	MAKE	ORDERING INFORMATION	COUNTRY OF ORIGIN
24	X1	BOLT CONNECTING TERMINAL BLOCKS FOR DISCONNECTABLE CT CIRCUITS	501	10	OTTA 6T P/P	PHOENIX	0790462	GERMANY
	X2	SPRING LOADED TERMINAL BLOCKS FOR DISCONNECTABLE VT CIRCUITS	501	5	D6/8.ST1.RS	ENTRELEC	1SNA 115 831 R0400	FRANCE
	X3	SPRING LOADED TERMINAL BLOCKS FOR DISCONNECTABLE AC CIRCUITS	501	10	D6/8.ST1.RS	ENTRELEC	1SNA 115 831 R0400	FRANCE
	X42	SPRING LOADED TERMINAL BLOCK FOR DISCONNECTABLE DC CIRCUITS	501	50	D6/8.ST1.RS	ENTRELEC	1SNA 115 831 R0400	FRANCE
	X52	SPRING LOADED TERMINAL BLOCK FOR DC PROTN. CIRCUITS	501	50	M6/8.RS	ENTRELEC	1SNA 115 688 R2500	FRANCE
	X62,X6	KNIFE TYPE TERMINAL BLOCKS FOR COMMON ALARM CIRCUITS	501	15,5	M6/8.SNB	ENTRELEC	1SNA 115 685 R1200	FRANCE
	X9	SPRING LOADED TERMINAL BLOCKS FOR SPARE CIRCITS	501	15	M6/8.RS	ENTRELEC	1SNA 115 688 R2500	FRANCE
	XTJ	SPRING LOADED TERMINAL BLOCKS FOR TELEPHONE JACK	501	5	M6/8.RS	ENTRELEC	1SNA 115 688 R2500	FRANCE
	XSH	SPRING LOADED TERMINAL BLOCKS FOR SPACE HEATER	501	3	M6/8.RS	ENTRELEC	1SNA 115 688 R2500	FRANCE
	XD	TERMINAL BLOCKS WITH BLOCKING DIODE	501	3	M4/6.S IN5408 V150ZA1	ENTRELEC MEJDAF RS	11521310 02-049 239-270	FRANCE
	X6	SPRING LOADED TERMINAL BLOCKS FOR ALARM CIRCITS	501	5	M6/8.RS	ENTRELEC	1SNA 115 688 R2500	FRANCE

G

AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		LIST OF APPARATUS		<div>الشركة الوطنية لنقل الكهرباء National Grid sa</div>				
01	13 49	FACTORY ASBUILT FOR APPROVAL	DRAWN BY RIZ CHECKED BY KVR		132kV UGF-SPARE-1 RELAY PANEL-2+R07.2				INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO. REV. NO.	
00	13 04		DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY				-	C421	CD-322924	SHT L05 CONT. L06	01
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA								

	1	2	3	4	5	6	7	8	9	10
A										
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C										
D										
E										
F										

LABEL REF.	LABEL ENGRAVING	MATERIALS	ENGRAVING	LABEL SIZE	LETTER SIZE
U05.5001	U05.5001 87L-2	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U12.5001	U12.5001 TS-1	ALUMINUM PAPER FOIL	BLACK LETTERS	50X15mm	4mm
U12.5002	U12.5002 TS-2	ALUMINUM PAPER FOIL	BLACK LETTERS	50X15mm	4mm
U16.5001	U16.5001 S03	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U16.5002	U16.5002 S04	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U16.5003	U16.5003 S86BU	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U16.5004	U16.5004 S86F2	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X10mm	3mm
U16.5005	U16.5005 LT	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X10mm	4mm
U16.5006	U16.5006 L01	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X10mm	4mm
U25.5001	U25.5001 86F2	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X10mm	4mm
U25.5002	U25.5002 85R2	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X10mm	4mm
U25.5003	U25.5003 86BU	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X10mm	4mm
U29.101	U29.101 74R2/74R3	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U29.107	U29.107 K01S	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U29.301	U29.301 TMR/86F2	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U29.125	U29.125 74IT2	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U29.119	U29.119 R1	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U29.319	U29.319 R2	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm

AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

01	13 49	FACTORY ASBUILT
00	13 04	FOR APPROVAL
REV. NO.	DATE	DESCRIPTION

DRAWN BY RIZ CHECKED BY KVR
DATE STARTED 24.01.2013 DATE COMPLETED _____
OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC

LIST OF APPARATUS
132kV UGF-SPARE-1 RELAY PANEL-2+R07.2
S/S 8709-132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء				نقل الكهرباء	
				National Grid sa	
INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.	
	C421	CD-322924		SHT	CONT.
				L06	L07
				01	

1	2	3	4	5	6	7	8	9	10
A									
B									
C									
D									
E									
F									

LABEL REF.	LABEL ENGRAVING	MATERIALS	ENGRAVING	LABEL SIZE	LETTER SIZE
C1	C1 127V AC SUPPLY MCB	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
C2	C2 220V AC SUPPLY MCB	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
C3	C3 THERMOSTAT	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
C7	C7 ON/OFF SWITCH	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
DS	DS DOOR SWITCH	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
IL	IL ILLUMINATION LAMP	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
SH	SH SPACE HEATER	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U39.5001	U39.5001 Q1	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U39.5002	U39.5002 Q2	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U39.5003	U39.5003 C01/C02	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U39.5004	U39.5004 TJ	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U36.5001	U36.5001 Q3	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U36.5002	U39.5002 Q4	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm

AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

01	13 49	FACTORY ASBUILT
00	13 04	FOR APPROVAL
REV. NO.	DATE	DESCRIPTION

DRAWN BY RIZ CHECKED BY KVR
DATE STARTED 24.01.2013 DATE COMPLETED _____
OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC

LIST OF APPARATUS

132kV UGF-SPARE-1 RELAY PANEL-2+R07.2
S/S 8709-132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء
National Grid sa

INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-322924	SHT CONT.	01
			L07 NIL	

NG/D2-D (2012/01)

DMS VECTOR NGD200



POWER SYSTEMS NETWORK MANAGEMENT
PROTECTION AND SUBSTATION AUTOMATION SYSTEMS
WBS NO: S-13656

ABB AUTOMATION COMPANY LTD.
414, AL-KHARJ ROAD
SECOND INDUSTRIAL CITY
RIYADH-11383 K.S.A

CONTRACTOR : ABB Contracting Company
CLIENT : National Gridsa
PROJECT : CONSTRUCTION OF NEW 132/13.8kV SS 8709 IN AL-KHARJ CITY
SUBSTATION : S/S 8709
CONTRACT NO. : 11131113/00
TITLE : SCHEMATICS DRAWINGS (Under Ground Feeder)

AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

01	13 49	FACTORY ASBUILT	DRAWN BY RIZ	CHECKED BY KVR
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013	DATE COMPLETED _____
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC

COVER SHEET

132kV UGF-SPARE-1 RELAY PANEL-1/2
S/S 8709-132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء



INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-322925	SHT 000	CONT. 001
				01

NG/D2-D (2012/01)


DMS

VECTOR

NGD200

	1	2	3	4	5	6	7	8	9	10
A										
B										
C										
D										
E										
F										

CONTENTS	ABB SHT.NO.	REV.00	REV.01	REV.02
AC SUPPLY FOR ILLUMINATION & POWER SOCKET	411	X	X	
AC MCB AUX CONTACTS	412	X	X	
AC MCB AUX CONTACTS	416	X	X	
CURRENT TRANSFORMER INPUTS -87L-2	421	X	X	
VOLTAGE TRANSFORMER INPUTS - 87L-2	422	X	X	
COMMUNICATION CIRCUIT - 87L2	423	X	X	
MAIN-2 PROT. 87L-2 RELAY BINARY INPUTS	431	X	X	
MAIN-2 DIFF. PROTECTION TRIP RELAY CKT.	432	X	X	
MAIN-2 INTERTRIP RELAY CKT.	433	X	X	
BACKUP PROTECTION TRIP RELAY CIRCUIT	443	X	X	
OPTICAL / ELECTRICAL INTERFACE	446	X	X	
MAIN-2 INDICATION CKT.	478	X	X	
TRIP COIL-2 SUPERVISION CIRCUIT	491	X	X	
TRIP COIL-1 & CBF INITIATION CONTACTS	492	X	X	
CLOSING CIRCUIT	493	X	X	
COMMON ALARM CIRCUITS	494	X	X	
SPARE CONTACTS	495	X	X	
BLOCK REFERENCE-87L-2	498	X	X	
BLOCK REFERENCE-87L-2	499	X	X	
TERMINAL BLOCKS REFERENCE +R07.2	501	X	X	

G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656	CONTENTS SHEET		<div>الشركة الوطنية لنقل الكهرباء</div> <div> نقل الكهرباء National Grid sa</div>						
	01	13 49	FACTORY ASBUILT	DRAWN BY RIZ	CHECKED BY KVR	132kV UGF-SPARE-1 RELAY PANEL-1/2	INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.			
	00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY	-	C421	CD-322925	SHT	CONT.		
	REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA				002	011		
												REV. NO. 01	

NG/D2-D (2012/01)

DMS VECTOR NGD200

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LEGENDS

±R1	DC SUPPLY – MAIN PROTECTION
±R2	DC SUPPLY – SECONDARY PROTECTION
±R3	DC SUPPLY – BACK UP PROTECTION
±IT	DC SUPPLY – INTER TRIP
FL	DC SUPPLY – FLASHING CIRCUIT
BB RS±	DC SUPPLY – BUS BAR – PROTECTION RESET
BB CBF±/CBF±	DC SUPPLY – CBF PROTECTION
R	RESET BUS – ALARM SYSTEM
CR	CONTROL ROOM
ECC	ENERGY CONTROL CENTRE
LOCAL	THE LOCATION OF CONTROLLED DEVICE
REMOTE	ANY OTHER LOCATION NOT LOCAL
ON	CB NORMALLY OPEN AUXILIARY CONTACT
OFF	CB NORMALLY CLOSED AUXILIARY CONTACT
A	COMMON
T	TEST POSITION
S	SERVICE POSITION
CS	CLOSE IN SERVICE POSITION
CT	CLOSE IN TEST POSITION
LS	LOCAL SERVICE
LT	LOCAL TEST
LC	LOCAL CLOSE
LO	LOCAL OPEN
RO	REMOTE OPEN
OP	OPERATE
RE	RESET

NOTES

LABELS

WHITE LABEL WITH BLACK LETTERING WILL BE PROVIDED FOR ALL MOUNTED APPARATUS EQUIPMENT IDENTIFICATION AND FUNCTION REFERENCE LABEL WILL BE PROVIDED FOR FRONT MOUNTED EQUIPMENTS OF THE PANEL AND EQUIPMENT IDENTIFICATION LABEL WILL BE PROVIDED FOR INTERNALLY MOUNTED EQUIPMENTS

WIRING

PVC INSULATED 600V GRADE
2.5 SQ.mm. YELLOW COLOURED FOR CT CIRCUITS
2.5 SQ.mm. RE COLOURED FOR VT CIRCUITS
1.5 SQ.mm. GREY COLOURED FOR DC SUPPLY, SCADA AND CONTROL CIRCUITS
2.5 SQ.mm. BLACK COLOURED FOR AVC AND AC CIRCUITS
2.5 SQ.mm. YELLOW/GREEN COLOURED FOR EARTHING CONNECTIONS
FOLLOWING MARKERS SHALL BE PROVIDED ON FOLLOWING WIRES:
+ SIGN FOR DC + WIRE
– SIGN FOR DC – WIRE

LUGS

A. CT CIRCUITS– RING TYPE
B. OTHER CIRCUITS – SPADE TYPE

FERULLING

YELLO TUBE 3.2 mm FOR 1.5SQ mm WIRES AND 4.2 FOR 2.5 SQ mm WIRES (AS PER 31 – TMSS–1, RE.0)

AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

01	13 49	FACTORY ASBUILT	DRAWN BY RIZ	CHECKED BY KVR
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013	DATE COMPLETED
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC

COMMON LEGEND

132kV UGF-SPARE-1 RELAY PANEL-1/2
S/S 8709-132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء



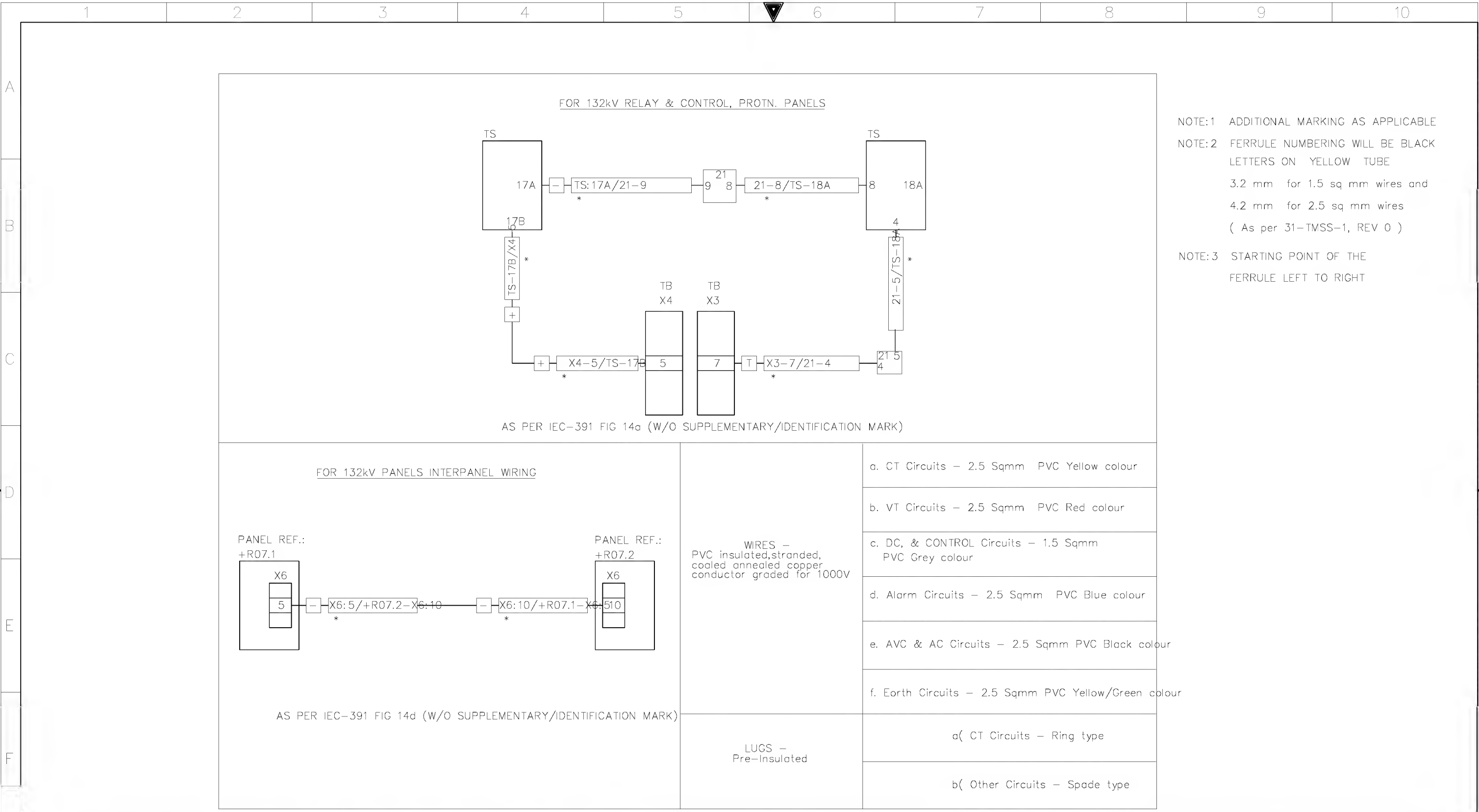
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-322925	SHT 013	CONT. 014
				01


NG/D2-D (2012/01)

DMS


VECTOR

NGD200



AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		FERRULE AND WIRING DETAILS		<div>الشركة الوطنية لنقل الكهرباء</div> <div>نقل الكهرباء</div> <div>National Grid sa</div>						
01	13 49	FACTORY ASBUILT	DRAWN BY RIZ		CHECKED BY KVR		132kV UGF-SPARE-1 RELAY PANEL-1/2								
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013		DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.		REV. NO.
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA		-	C421	CD-322925		SHT 014	CONT. 015	01

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MANUFACTURER	SCHEMATICS DWG.NO	PANEL DESCRIPTION	PANEL REFERENCE
 PROTECTION & SUBSTATION AUTOMATION		SS 8709 132kV RELAY PANELS	
	CD-322928	132/13.8kV GT-1 RELAY PANEL -1	+R05.1
		132/13.8kV GT-1 RELAY PANEL -2	+R05.2
	CD-322931	132/13.8kV GT-2 RELAY PANEL -1	+R07.1
		132/13.8kV GT-2 RELAY PANEL -2	+R07.2
	CD-322934	132/13.8kV GT-3 RELAY PANEL -1	+R04.1
		132/13.8kV GT-3 RELAY PANEL -2	+R04.2
	CD-322936	132/13.8kV TRANSFORMER-1,2& 3 AVC PANEL	+AVC
	CD-322922	132KV SPARE-1 UGF RELAY PANEL -1	+R07.1
		132KV SPARE-1 UGF RELAY PANEL -2	+R07.2
	CD-322916	132KV 8020 UGF RELAY PANEL -1	+R02.1
		132KV 8020 UGF RELAY PANEL -2	+R02.2
	CD-322925	132KV SPARE UGF RELAY PANEL -1	+R07.1
		132KV SPARE UGF RELAY PANEL -2	+R07.2
	CD-322925	132KV SPARE-2 UGF RELAY PANEL -1	+R06.1
		132KV SPARE-2 UGF RELAY PANEL -2	+R06.2
	CD-327012	132KV FOIP PANEL	+FOIP
	CD-322946	132kV BUS COUPLER-A	+R130
	CD-322948	132kV BUS COUPLER-B	+R230
	CD-322950	132kV BUS SECTION	+R120
	CD-322991	132kV BUSBAR PROTECTION MAIN-1 CENTRAL UNIT PANEL	+BB1-1
	CD-322993	132kV BUSBAR PROTECTION MAIN-1 BAY UNIT PANEL	+BB1-2
	CD-322995	132kV BUSBAR PROTECTION MAIN-1 BAY UNIT PANEL	+BB1-3
	CD-322997	132kV BUSBAR PROTECTION MAIN-1 BAY UNIT PANEL	+BB1-4
	CD-322999	132kV BUSBAR PROTECTION MAIN-1 BAY UNIT PANEL	+BB1-5
	CD-323001	132kV BUSBAR PROTECTION MAIN-2 CENTRAL UNIT PANEL	+BB2-1
	CD-323003	132kV BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL	+BB2-2
	CD-323005	132kV BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL	+BB2-3
	CD-323007	132kV BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL	+BB2-4
	CD-323009	132kV BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL	+BB2-5

AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656	
01	13 49	FACTORY ASBUILT	DRAWN BY RIZ		CHECKED BY KVR	
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013		DATE COMPLETED _____	
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC	

DRAWING REFERENCES	
132kV UGF-SPARE-1 RELAY PANEL-1/2	
S/S 8709-132/13.8KV IN AL-KHARJ CITY	
RIYADH	SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء			 نقل الكهرباء National Grid SA		
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.		REV. NO.
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MANUFACTURER	SCHEMATICS DWG.NO	PANEL DESCRIPTION	PANEL REFERENCE
 PROTECTION & SUBSTATION AUTOMATION		SS 8709 13.8KV RELAY PANELS	
	CD-322952	13.8KV Capacitor Bank-1 Protection Panel	+CBP-1
	CD-322954	13.8KV Capacitor Bank-2 Protection Panel	+CBP-2
	CD-322956	13.8KV Capacitor Bank-2 Protection Panel	+CBP-3
	CD-322958	13.8 KV ACCS PANEL	+ACCS
	CD-322962	13.8KV ACSE PANEL	+ACSE
	CD-322968	13.8KV Under Voltage Load Shedding Panel	+UVLS
	CD-322964	13.8KV Under Frequency Load Shedding Panel-1	+UFLS01
	CD-322966	13.8KV Under Frequency Load Shedding Panel-2	+UFLS02

AS-BUILT BY _____ DATE _____

CONTRACT NO. 11131113/00

JOB ORDER NO. S-13656

01

13 49

FACTORY ASBUILT

00

13 04

FOR APPROVAL

REV. NO.

DATE

DESCRIPTION

DRAWN BY RIZ

CHECKED BY KVR

DATE STARTED 24.01.2013

DATE COMPLETED

OPRG. DEPT. CTPD

ENG. DEPT. AUT-PSAC

DRAWING REFERENCES

132kV UGF-SPARE-1 RELAY PANEL-1/2

S/S 8709-132/13.8KV IN AL-KHARJ CITY

RIYADH SAUDI ARABIA

نقل الكهرباء

National Grid sa

الشركة الوطنية لنقل الكهرباء

INDEX

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SHEET NO.

REV. NO.

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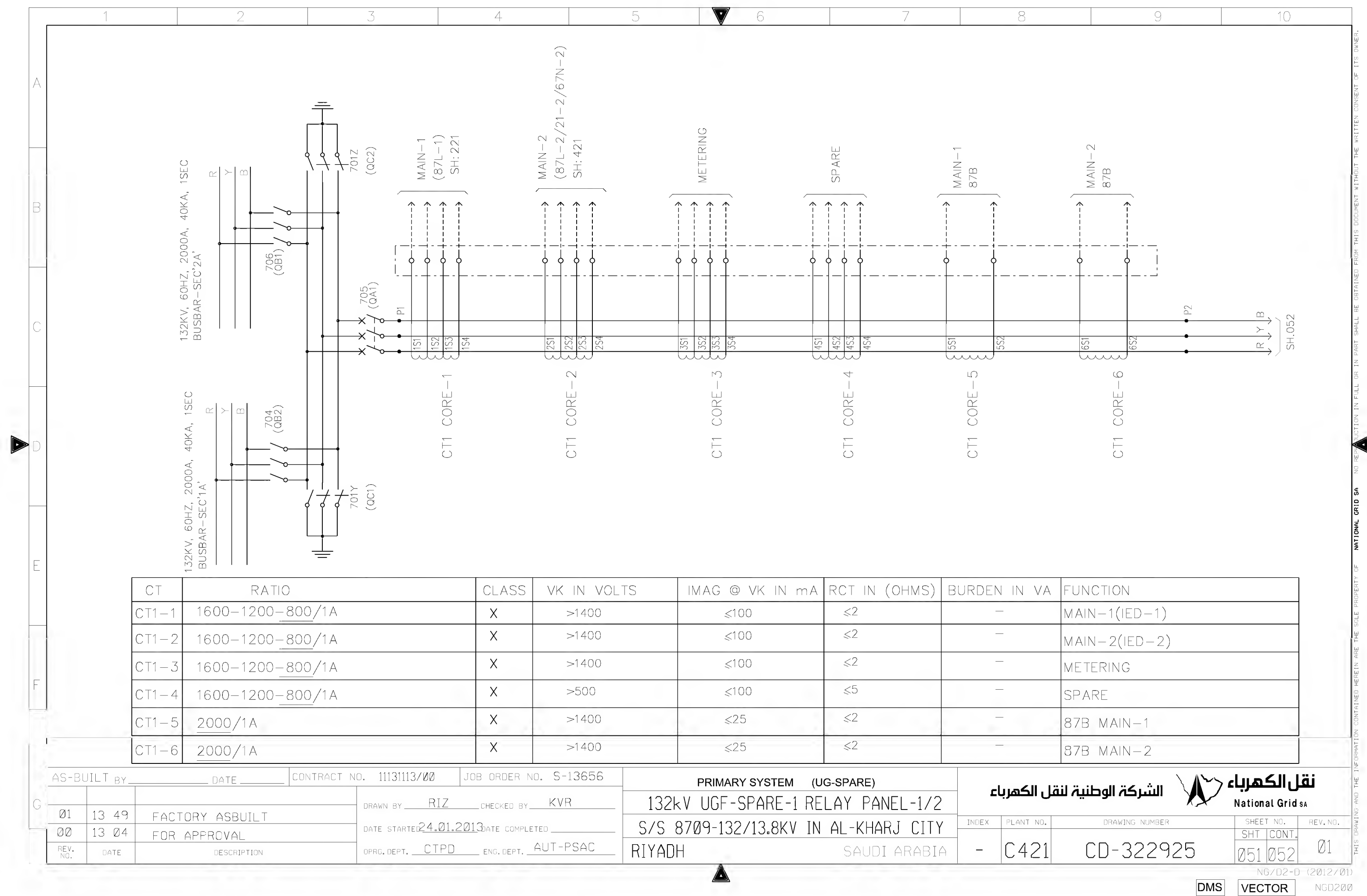
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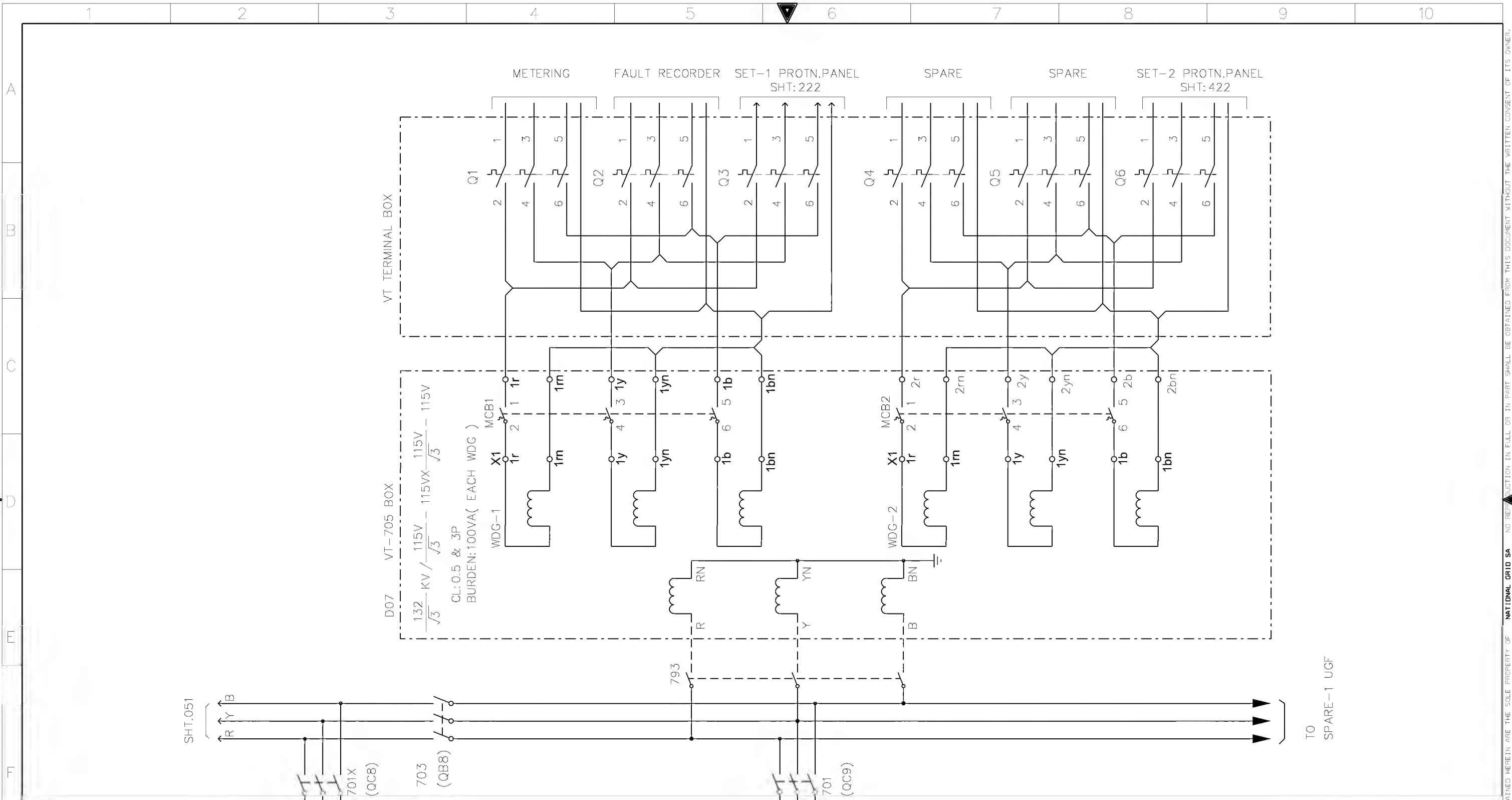
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SHT016

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AS-BUILT BY _____ DATE _____

CONTRACT NO. 11131113/00

JOB ORDER NO. S-13656

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13 49

FACTORY ASBUILT

00

13 04

FOR APPROVAL

REV. NO.

DATE

DESCRIPTION

DRAWN BY RIZ

CHECKED BY KVR

DATE STARTED 24.01.2013

DATE COMPLETED _____

OPRG. DEPT. CTPD

ENG. DEPT. AUT-PSAC


PRIMARY SYSTEM (UG-SPARE)

132kV UGF-SPARE-1 RELAY PANEL-1/2

S/S 8709-132/13.8KV IN AL-KHARJ CITY

RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء



نقل الكهرباء

National Grid sa

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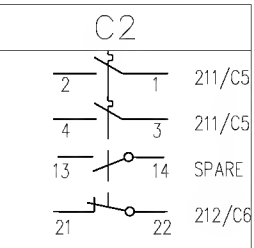
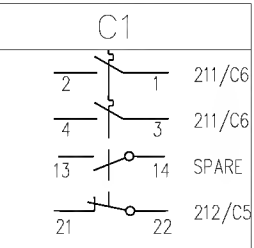
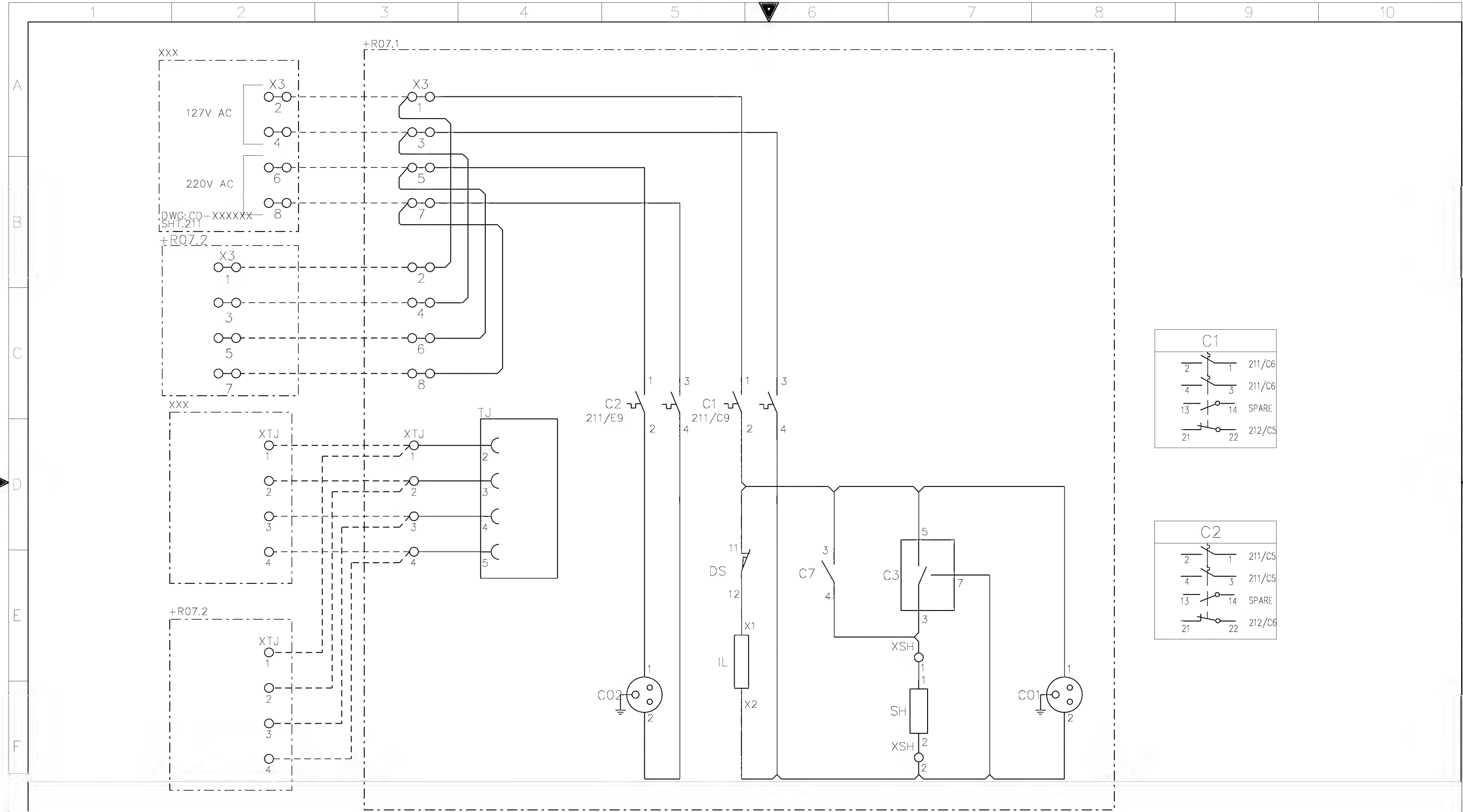
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DMS

VECTOR

NGD200

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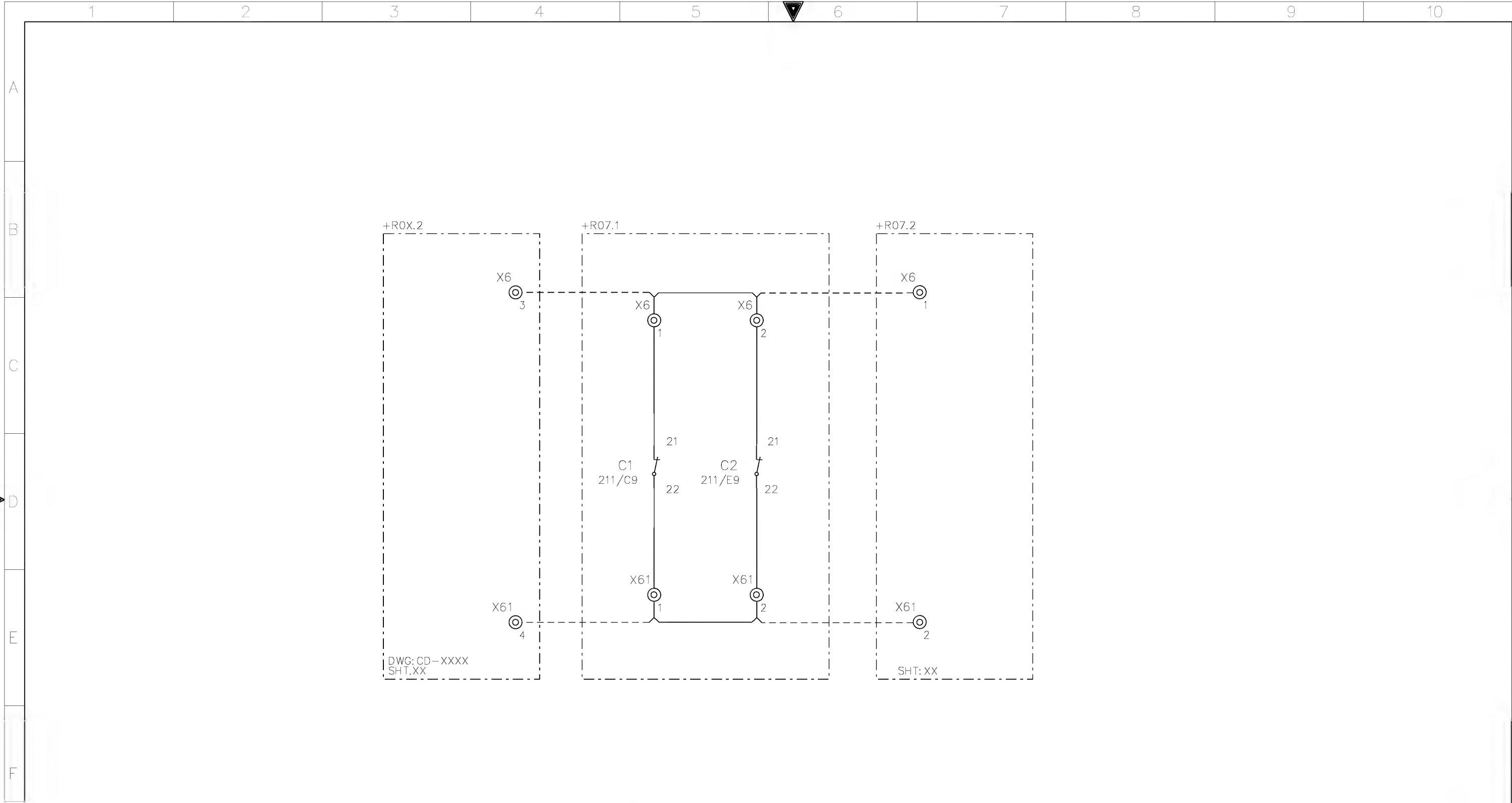


AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

01	13 49	FACTORY ASBUILT	DRAWN BY RIZ	CHECKED BY KVR
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013	DATE COMPLETED _____
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC

AC SUPPLY FOR ILLUMINATION & POWER SOCKET
132kV UGF-SPARE-1 RELAY PANEL-1/2
S/S 8709-132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء				نقل الكهرباء		
				National Grid sa		
EX	PLANT NO.	DRAWING NUMBER		SHEET NO.		REV. NO.
-	C421	CD-322925		SHT	CONT.	01
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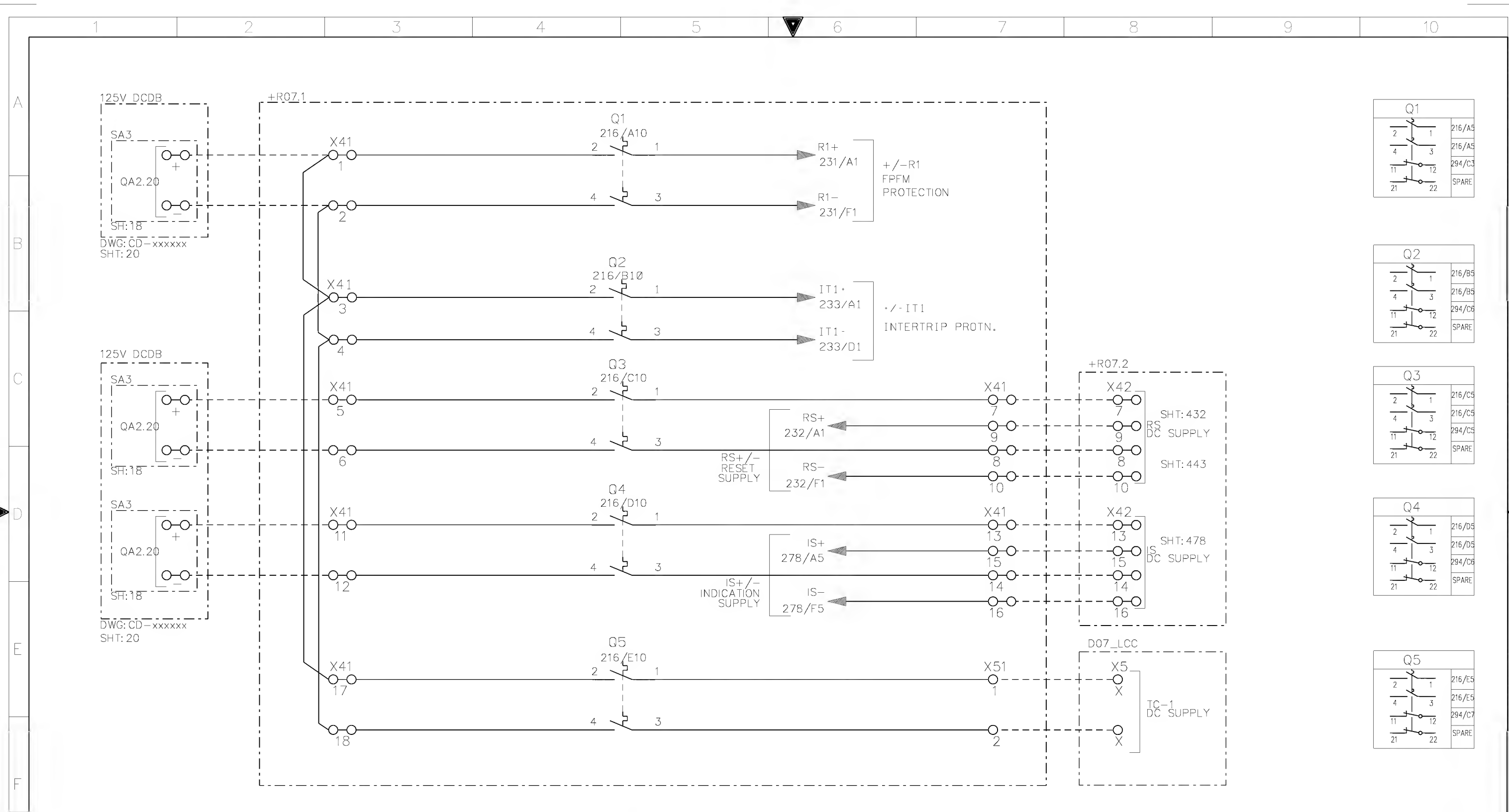
AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

01	13 49	FACTORY ASBUILT
00	13 04	FOR APPROVAL
REV. NO.	DATE	DESCRIPTION

DRAWN BY RIZ CHECKED BY KVR
DATE STARTED 24.01.2013 DATE COMPLETED _____
OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC

AC MCB AUX CONTACTS
132kV UGF-SPARE-1 RELAY PANEL-1/2
S/S 8709-132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

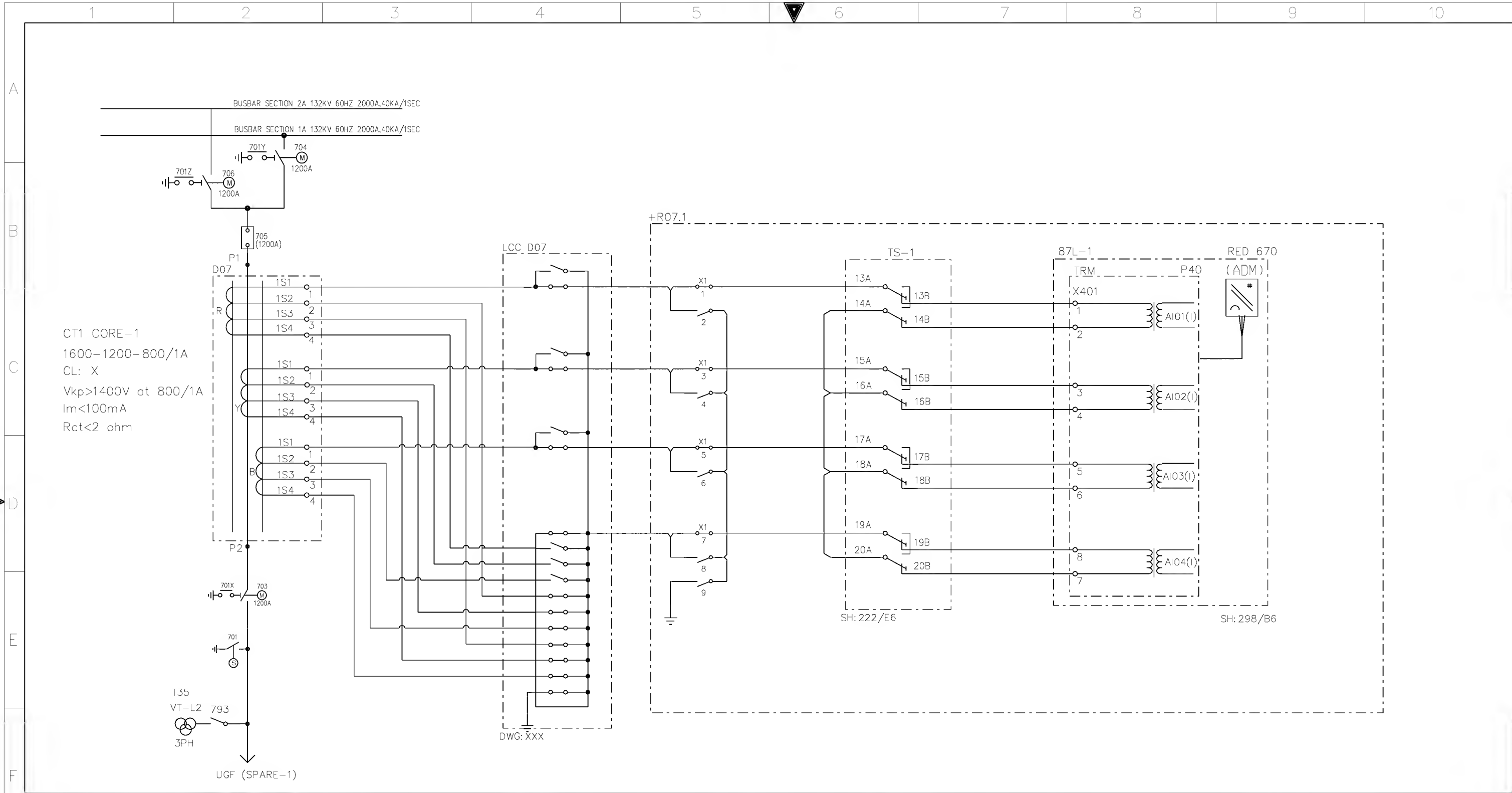
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INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.		REV. NO.
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AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656	
01	13 49	FACTORY ASBUILT FOR APPROVAL	DRAWN BY RIZ		CHECKED BY KVR	
00	13 04		DATE STARTED 24.01.2013		DATE COMPLETED _____	
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DC SUPPLY DISTRIBUTION	
132kV UGF-SPARE-1 RELAY PANEL-1/2	
S/S 8709-132/13.8KV IN AL-KHARJ CITY	
RIYADH	SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء				نقل الكهرباء		
				National Grid SA		
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+R07.1

AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

01	13 49	FACTORY ASBUILT	DRAWN BY RIZ	CHECKED BY KVR
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013	DATE COMPLETED _____
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC

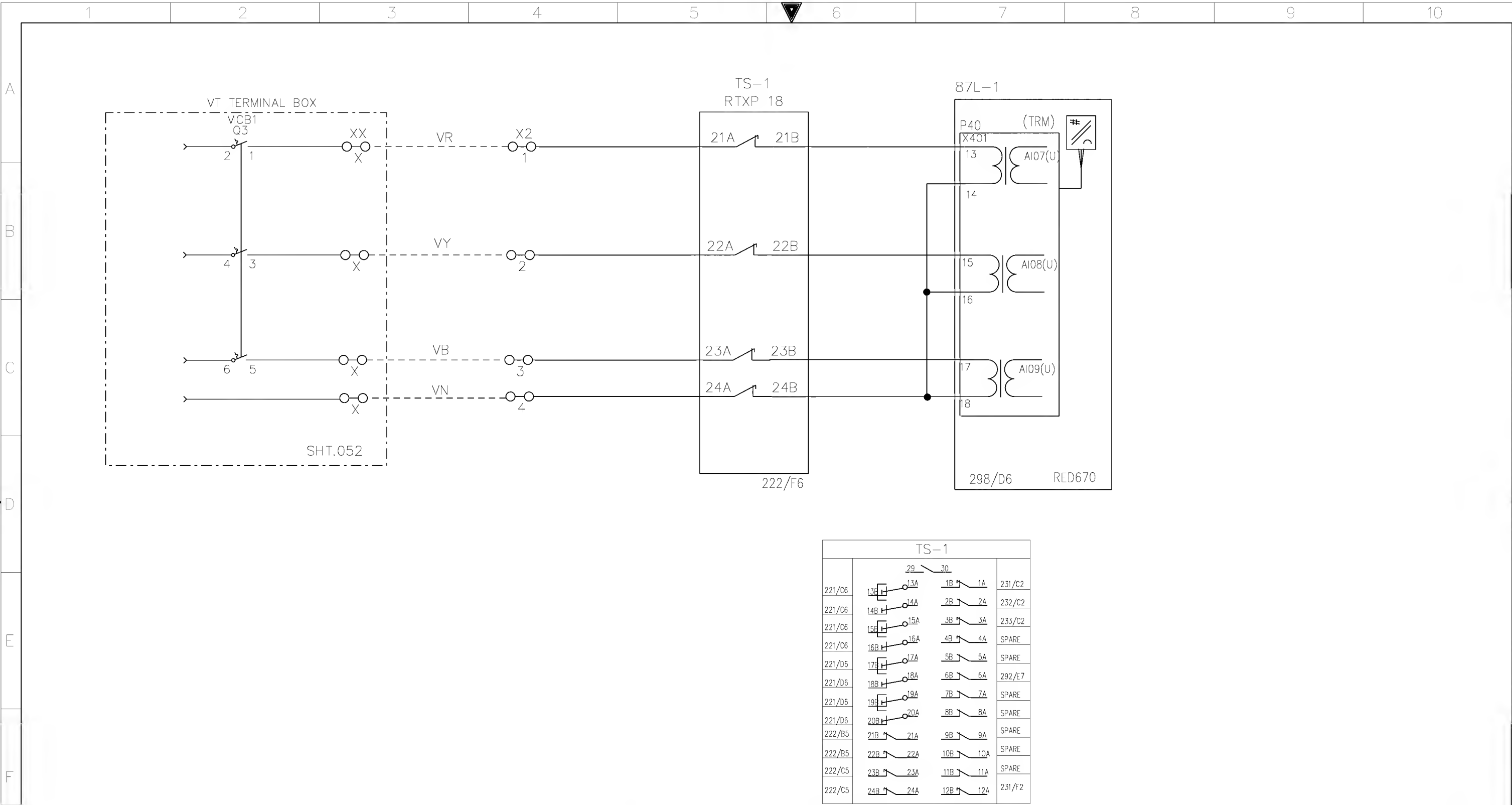
CURRENT TRANSFORMER INPUTS -87L-1
132kV UGF-SPARE-1 RELAY PANEL-1+R07.1
S/S 8709-132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء
National Grid sa

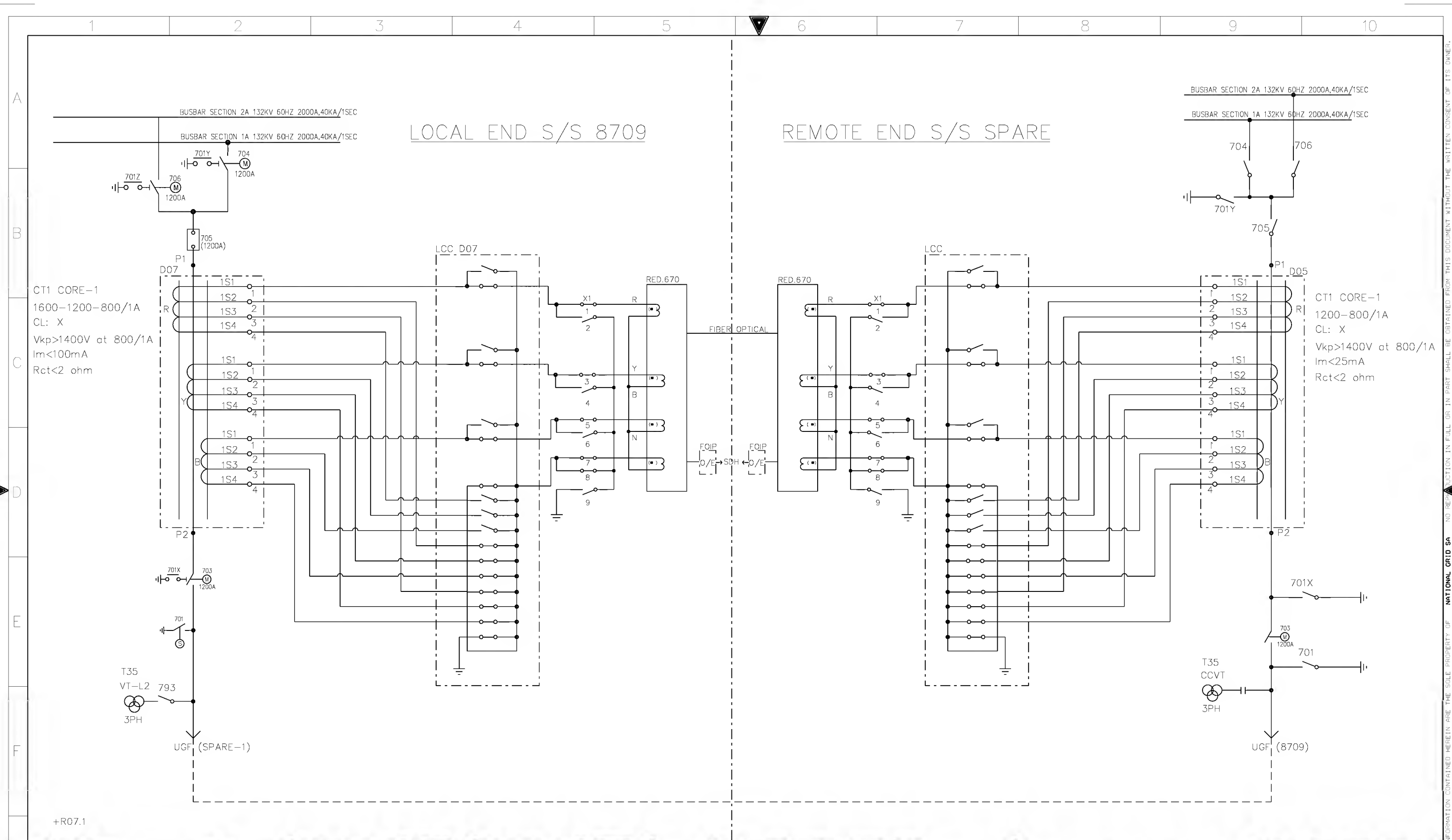
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DMS VECTOR NGD200



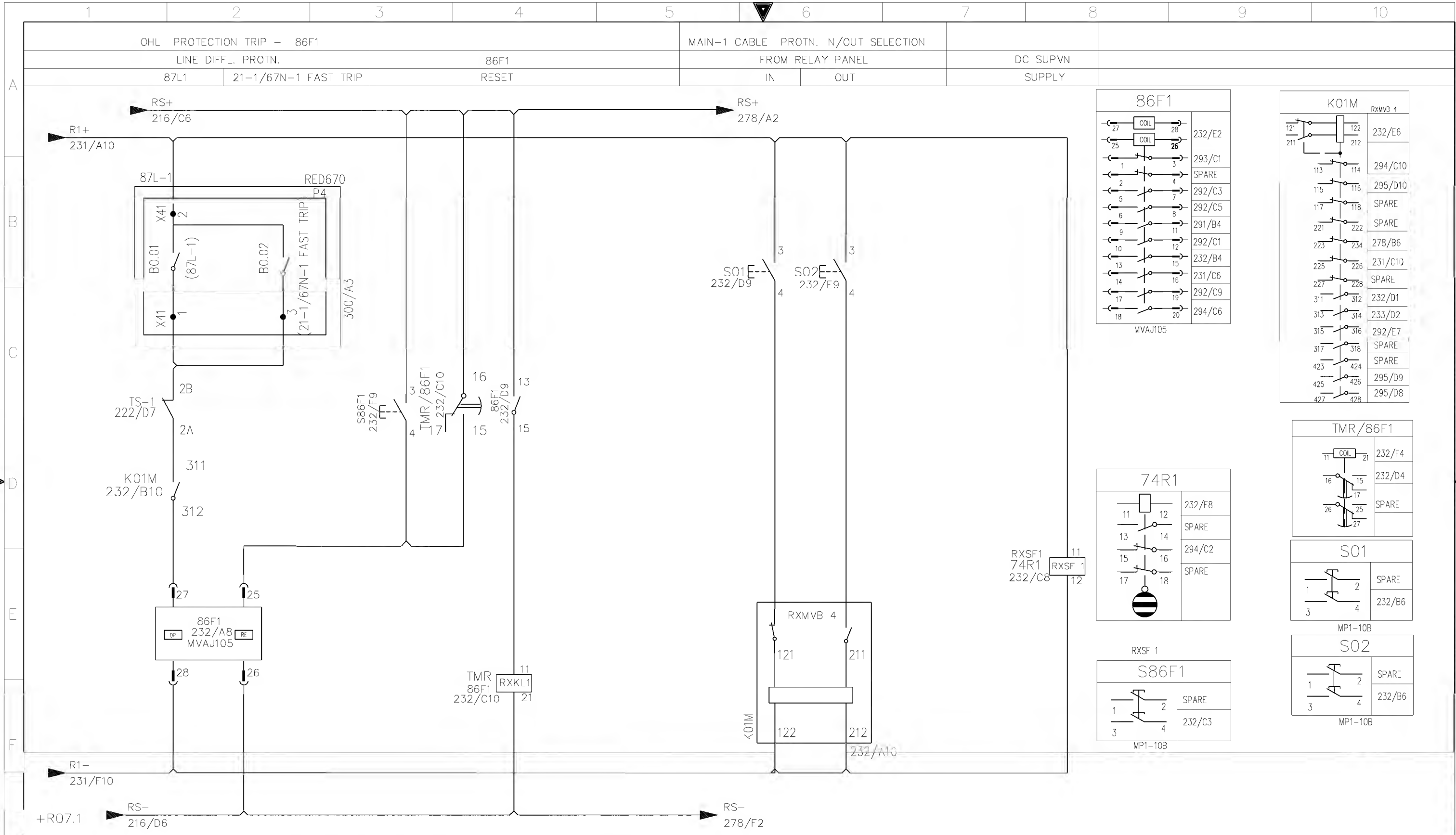
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			DRAWN BY RIZ		CHECKED BY KVR		132kV UGF-SPARE-1 RELAY PANEL-1+R07.1															
			DATE STARTED 24.01.2013		DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY															
00			13 04		FOR APPROVAL		RIYADH		SAUDI ARABIA													
REV. NO.			DATE			DESCRIPTION			OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		INDEX		PLANT NO.		DRAWING NUMBER		SHEET NO.		REV. NO.	
													-		C421		CD-322925		SHT 222		CONT. 223 01	



AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656	
01	13 49	FACTORY ASBUILT FOR APPROVAL	DRAWN BY RIZ		CHECKED BY KVR	
00	13 04		DATE STARTED 24.01.2013		DATE COMPLETED _____	
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC	

COMMUNICATION CIRCUITS	
132kV UGF-SPARE-1 RELAY PANEL-1+R07.1	
S/S 8709-132/13.8KV IN AL-KHARJ CITY	
RIYADH	SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء				نقل الكهرباء	
				National Grid SA	
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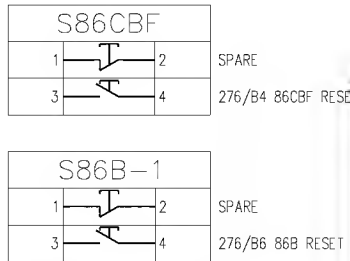
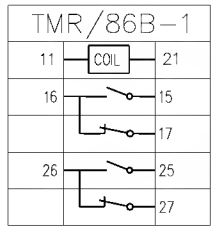
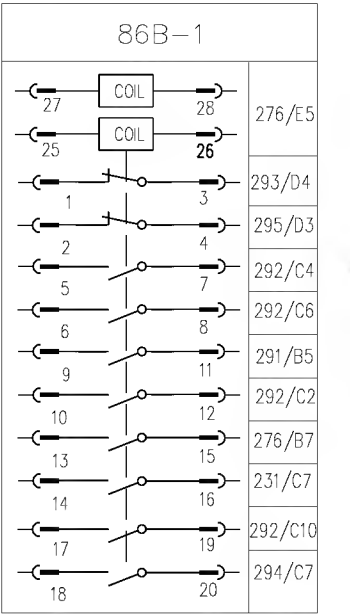
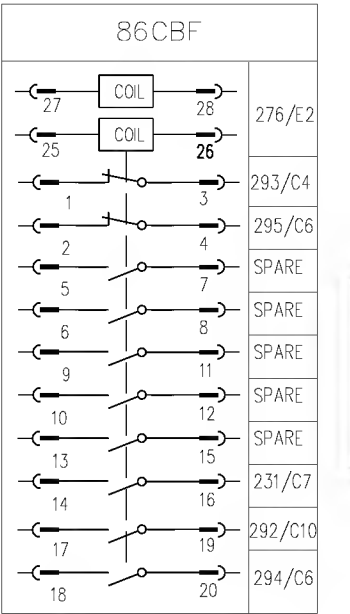
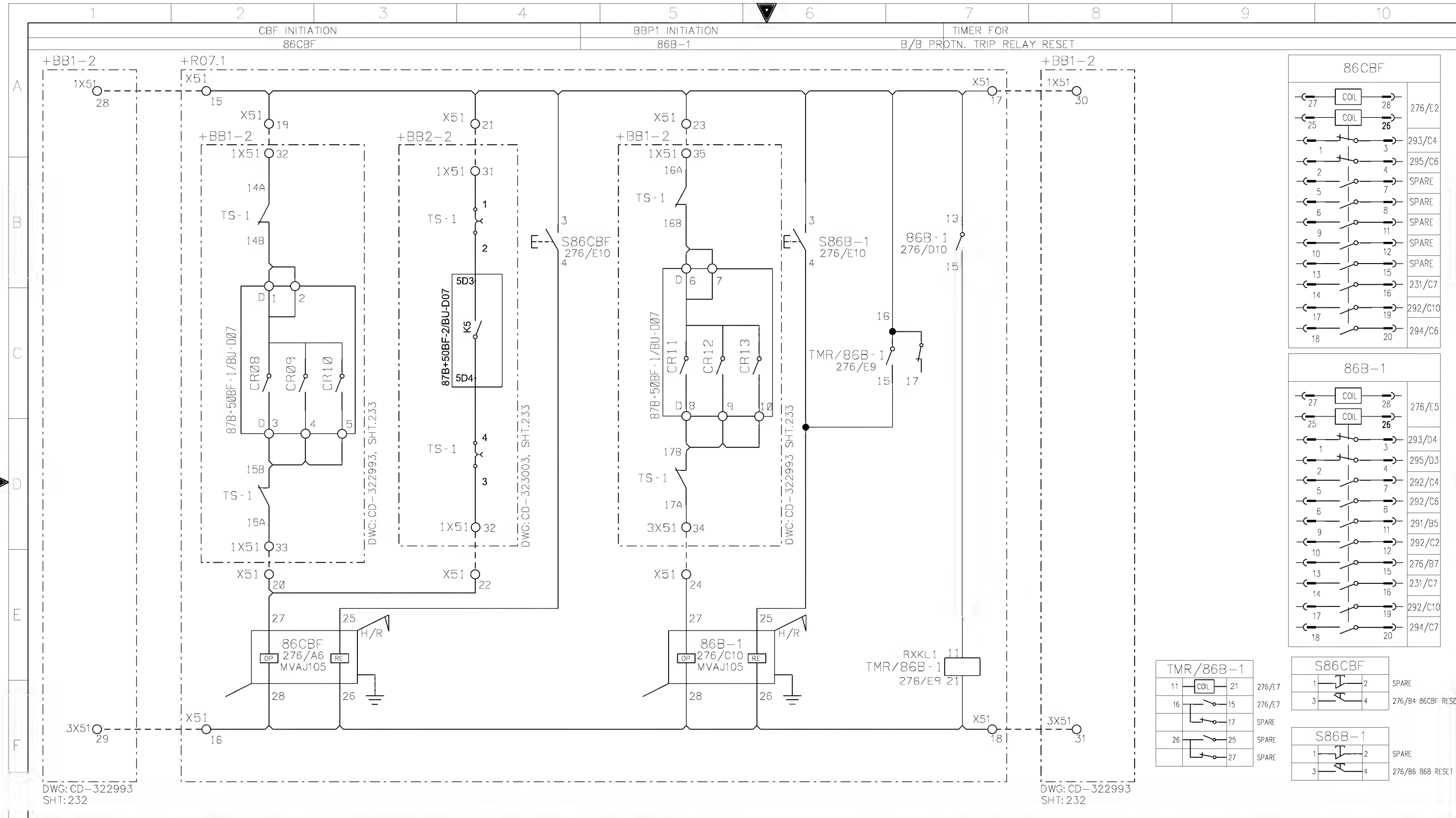


AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		MAIN-1 CABLE DIFF.PROTECTION TRIP RELAY CKT.		
01 13 49			FACTORY ASBUILT		DRAWN BY RIZ CHECKED BY KVR		132kV UGF-SPARE-1 RELAY PANEL-1+R07.1		
00 13 04			FOR APPROVAL		DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		
REV. NO. DATE DESCRIPTION			OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC				RIYADH SAUDI ARABIA		
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							-	C421	CD-322925
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الشركة الوطنية لنقل الكهرباء

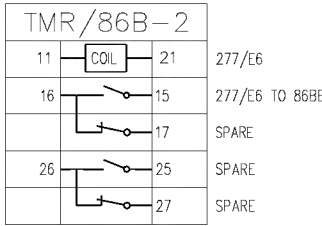
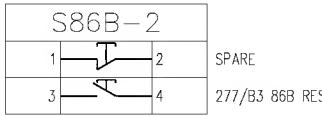
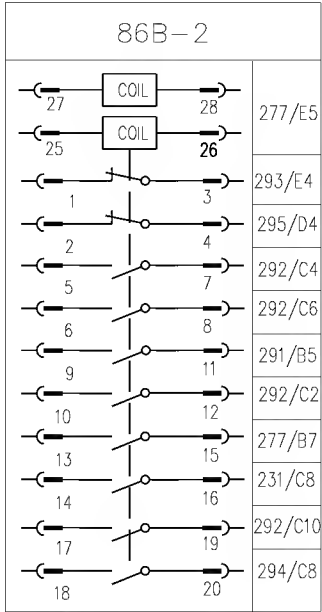
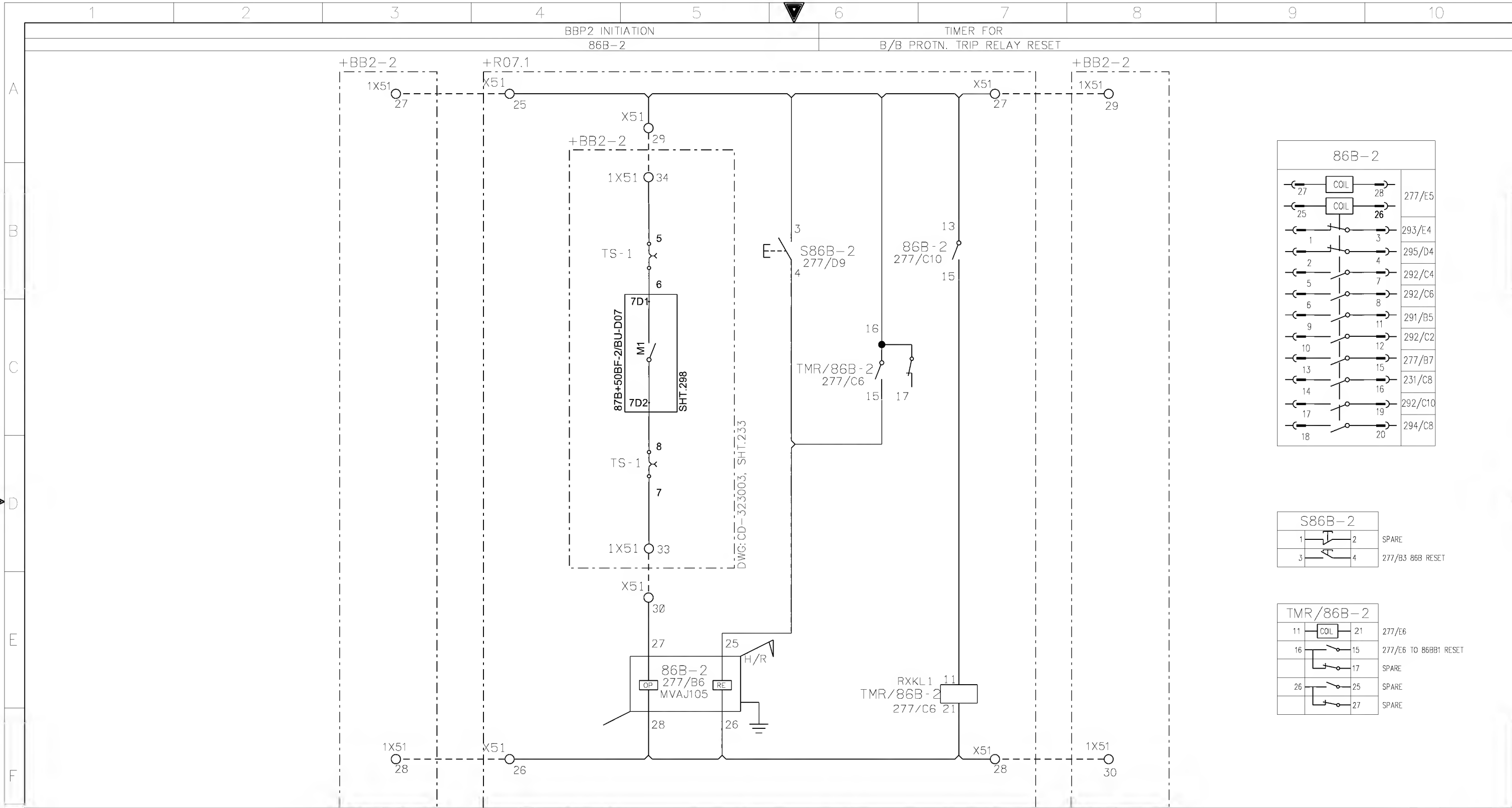
National Grid sa



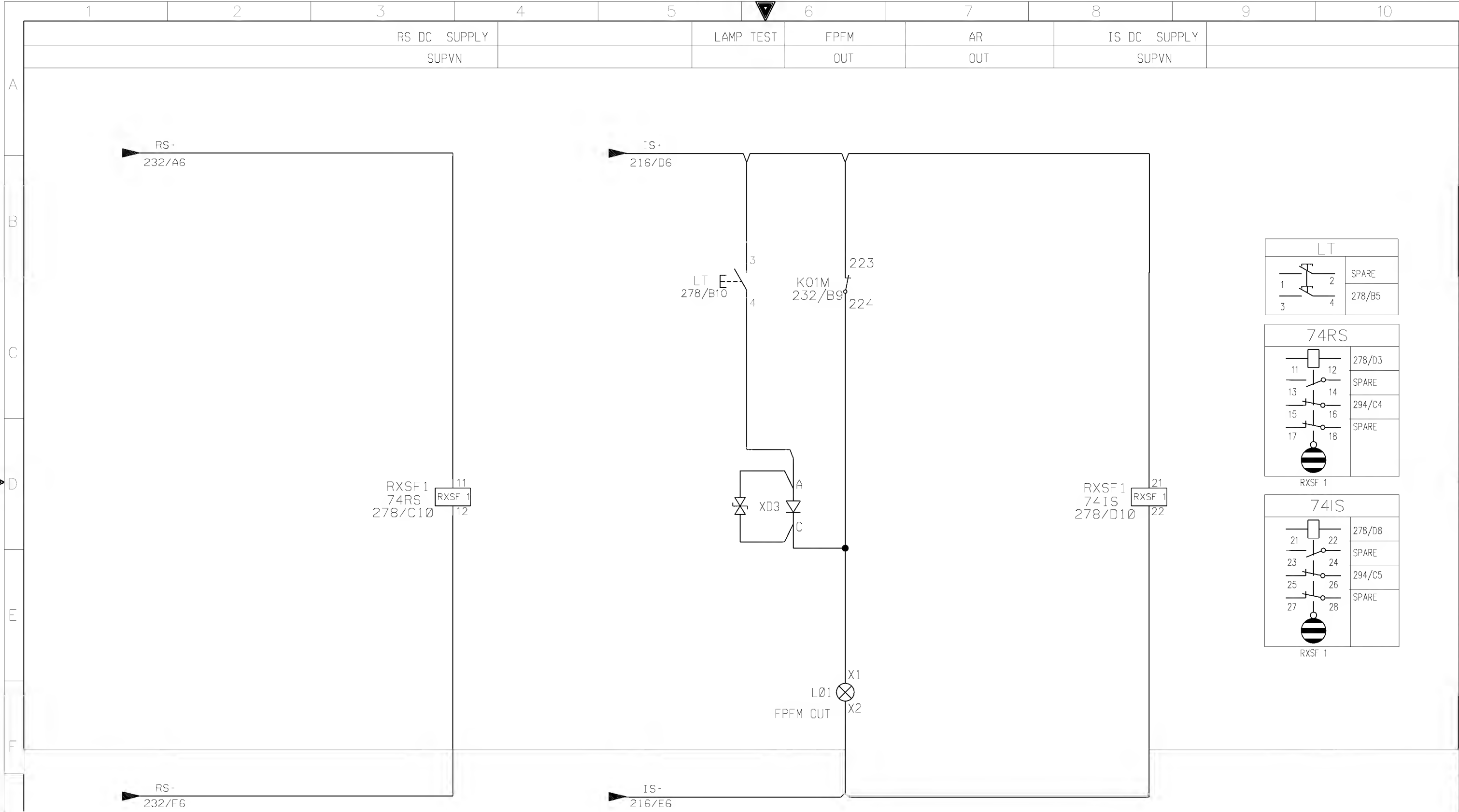
AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656	
01	13 49	FACTORY ASBUILT		DRAWN BY RIZ	CHECKED BY KVR
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REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC

CBF-1/2 & BUSBAR PROTN-1 TRIP RELAY CIRCUIT
132kV UGF-SPARE-1 RELAY PANEL-1+R07.1
S/S 8709-132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء				نقل الكهرباء		
				National Grid sa		
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AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		BUSBAR PROTN-2 TRIP RELAY CIRCUIT		<div>الشركة الوطنية لنقل الكهرباء</div> <div>National Grid sa</div>								
			DRAWN BY <u>RIZ</u> CHECKED BY <u>KVR</u>		132kV UGF-SPARE-1 RELAY PANEL-1+R07.1												
01	13 49	FACTORY ASBUILT		DATE STARTED <u>24.01.2013</u> DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX		PLANT NO.	DRAWING NUMBER		SHEET NO.		REV. NO.		
00	13 04	FOR APPROVAL		OPRG. DEPT. <u>CTPD</u> ENG. DEPT. <u>AUT-PSAC</u>		RIYADH		-		C421	CD-322925		SHT		CONT.	01	
REV. NO.		DATE		DESCRIPTION													



AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

01	13 49	FACTORY ASBUILT
00	13 04	FOR APPROVAL
REV. NO.	DATE	DESCRIPTION

DRAWN BY RIZ CHECKED BY KVR

DATE STARTED 24.01.2013 DATE COMPLETED _____

OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC

BUSBAR PROTN-2 TRIP RELAY CIRCUIT

132kV UGF-SPARE-1 RELAY PANEL-1+R07.1

S/S 8709-132/13.8KV IN AL-KHARJ CITY

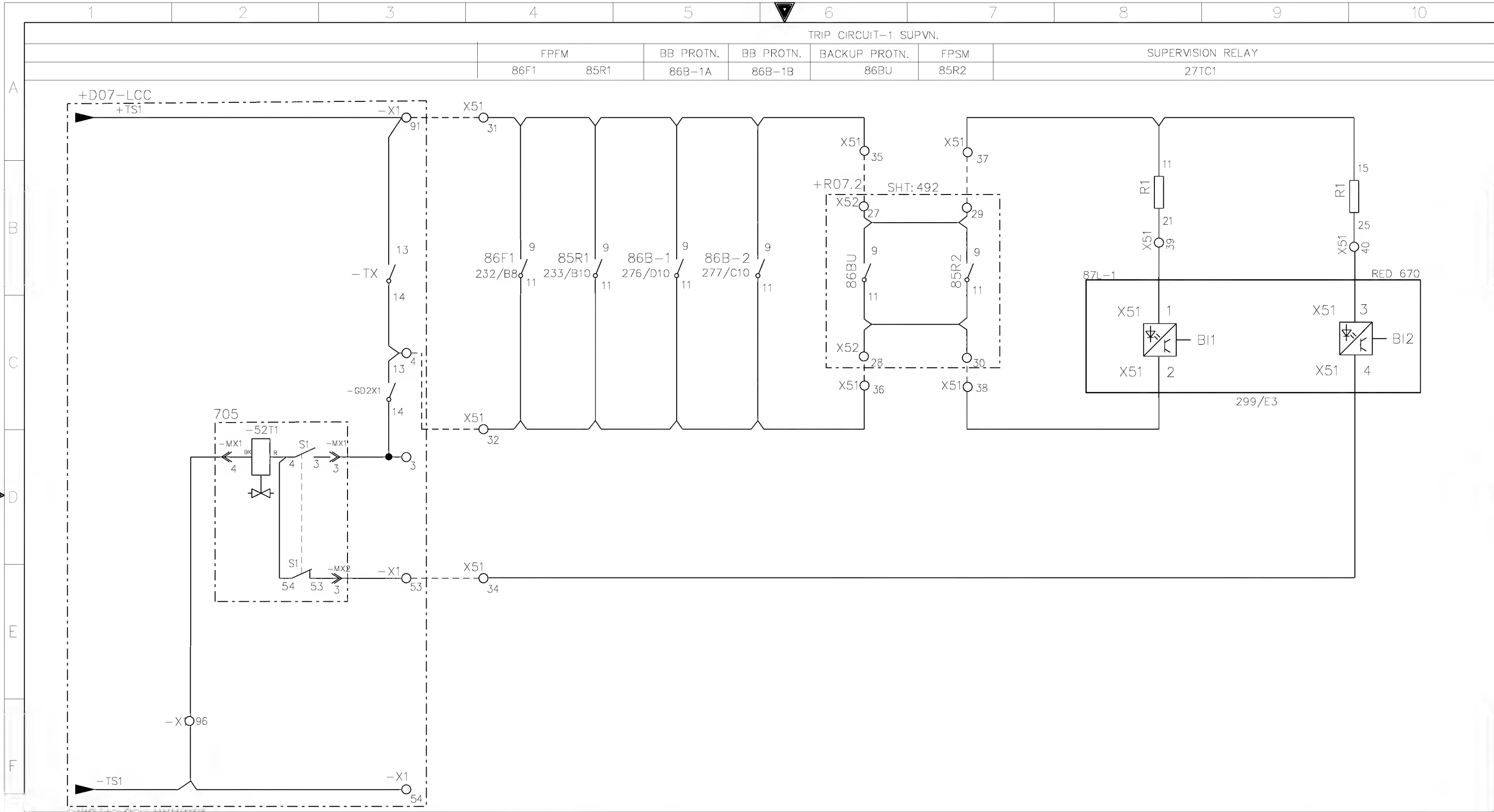
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء

نقل الكهرباء

National Grid sa

INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-322925	SHT CONT.	01
			278 291	



DWG. NO. CD=XXXXXX
SHT. XX

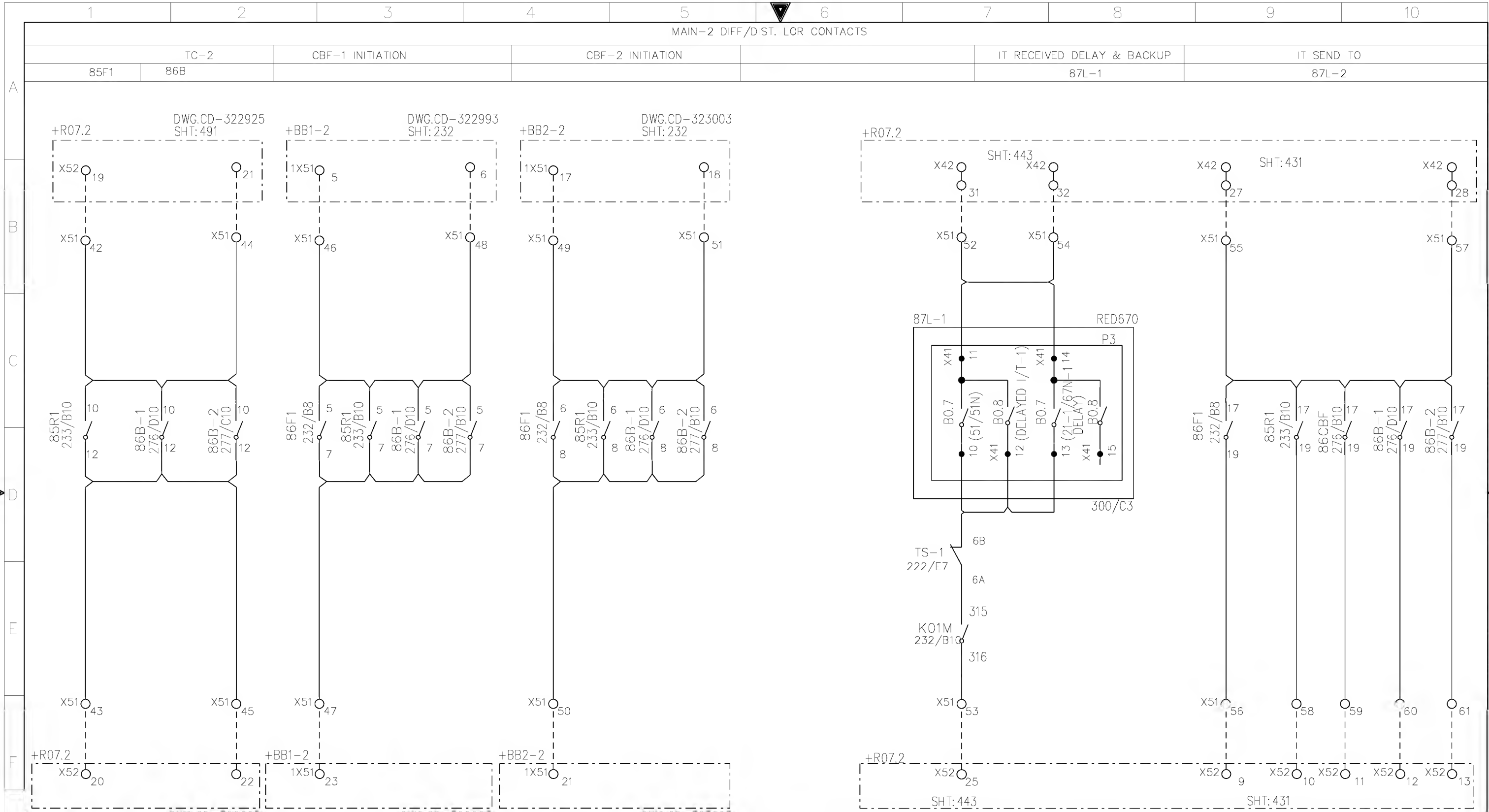
+R07.1

AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

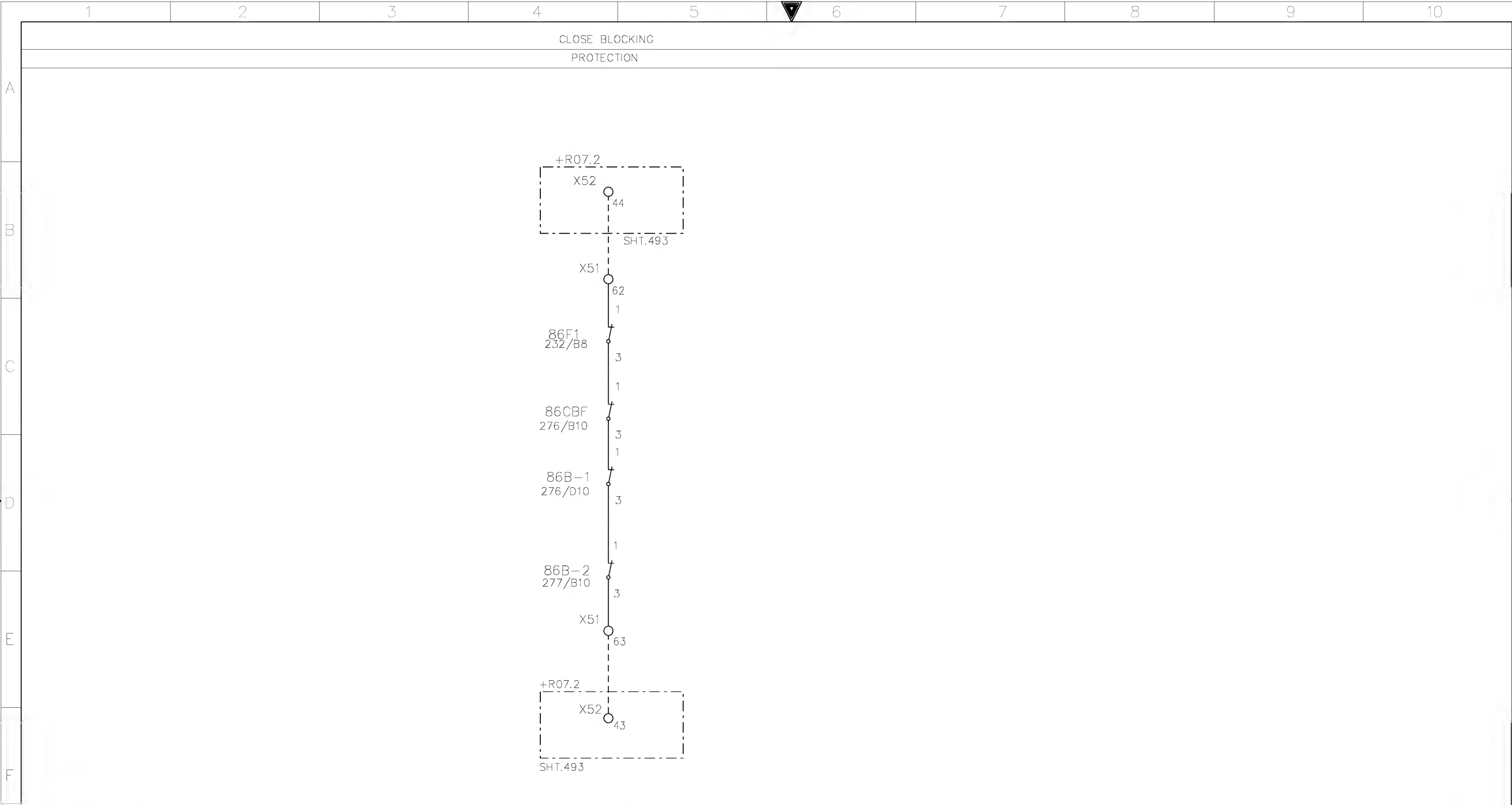
01	13 49	FACTORY ASBUILT	DRAWN BY RIZ	CHECKED BY KVR
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013	DATE COMPLETED
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC

TRIP COIL-1 SUPERVISION CIRCUIT
132kV UGF-SPARE-1 RELAY PANEL-1+R07.1
S/S 8709-132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

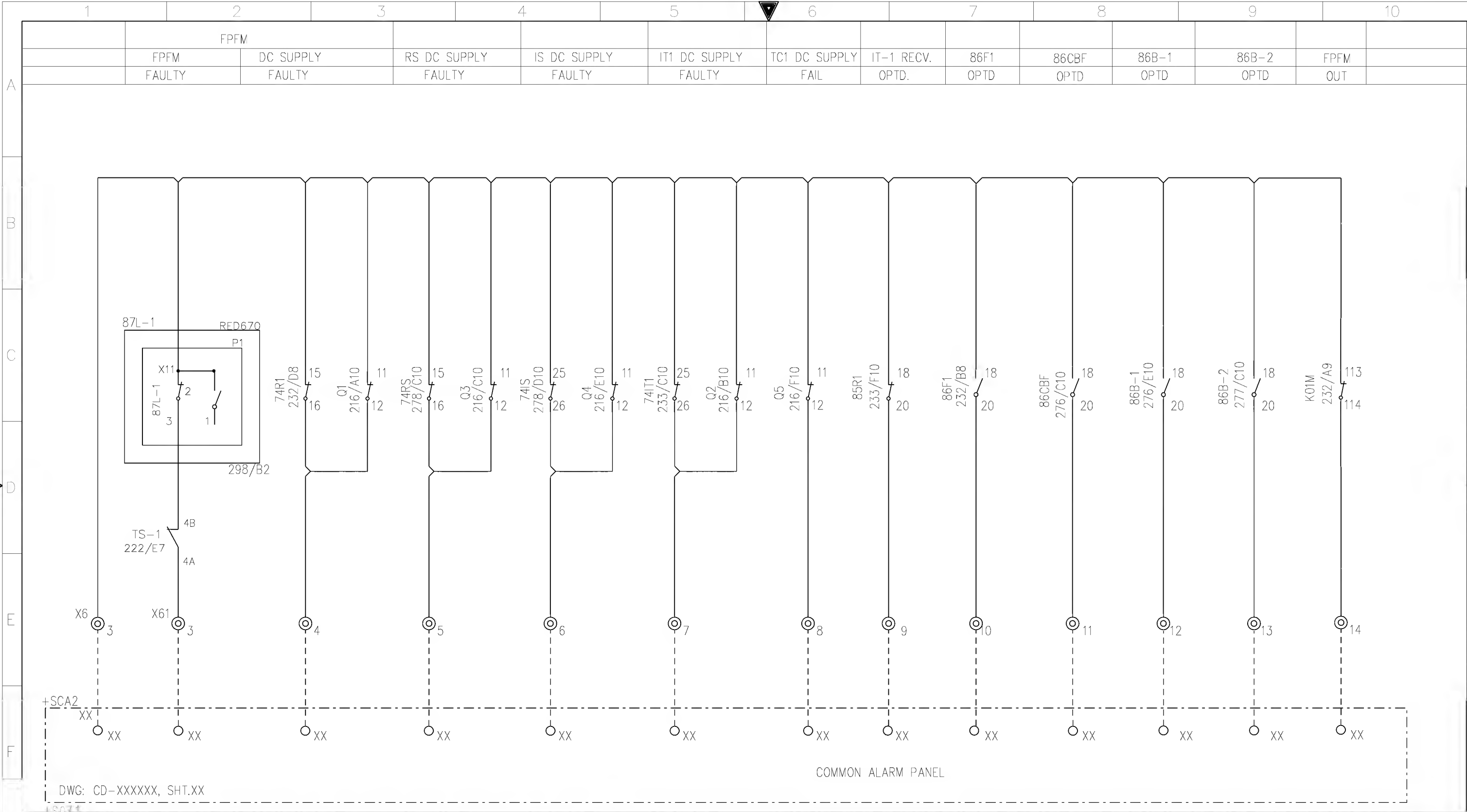
الشركة الوطنية لنقل الكهرباء		نقل الكهرباء	
National Grid sa		National Grid sa	
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.
-	C421	CD-322925	291
			292
			01



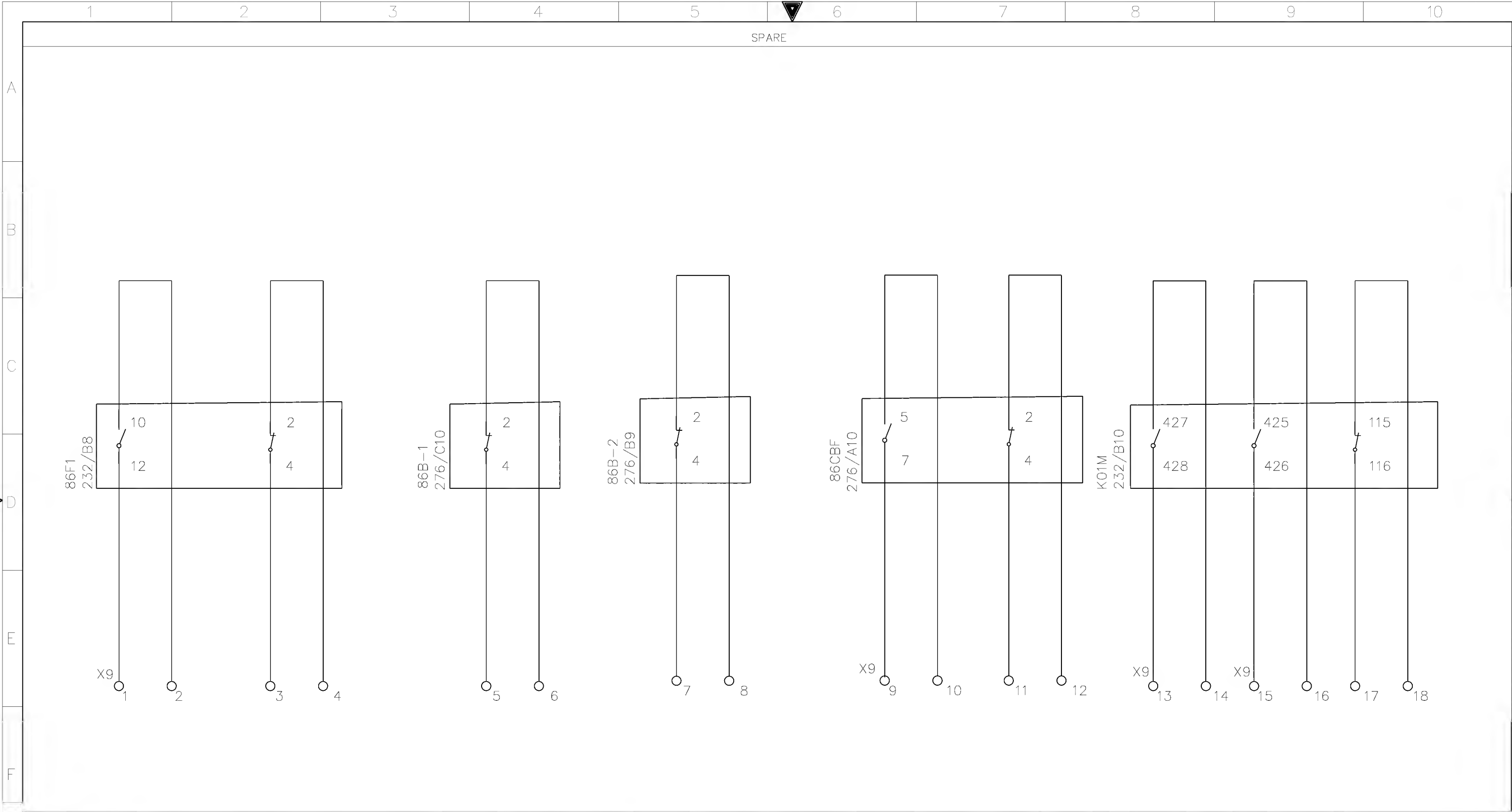
AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		TRIP COIL-2/DELAY TRIP/CBF CIRCUIT		<div>نقل الكهرباء</div> <div>الشركة الوطنية لنقل الكهرباء</div> <div>National Grid sa</div>									
			DRAWN BY RIZ		CHECKED BY KVR		132kV UGF-SPARE-1 RELAY PANEL-1+R07.1											
01 13 49			FACTORY ASBUILT		DATE STARTED 24.01.2013		DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.		REV. NO.	
00 13 04			FOR APPROVAL		OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA		-	C421	CD-322925		SHT 292		CONT. 293	01
REV. NO.			DATE		DESCRIPTION													



G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		CLOSE BLOCK CIRCUIT		<div>الشركة الوطنية لنقل الكهرباء</div> <div>نقل الكهرباء</div> <div>National Grid sa</div>			
	01	13 49	FACTORY ASBUILT FOR APPROVAL		DRAWN BY RIZ CHECKED BY KVR		132kV UGF-SPARE-1 RELAY PANEL-1+R07.1					
	00	13 04			DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY					
	REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA		INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
							-	C421	CD-322925	SHT 293	CONT. 294	01



G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		COMMON ALARM CIRCUITS		<div>الشركة الوطنية لنقل الكهرباء</div> <div>نقل الكهرباء</div> <div>National Grid sa</div>						
	01	13 49	FACTORY ASBUILT FOR APPROVAL		DRAWN BY RIZ CHECKED BY KVR		132kV UGF-SPARE-1 RELAY PANEL-1+R07.1								
	00	13 04			DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY								
	REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH		SAUDI ARABIA		INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.	
							-	C421	CD-322925		SHT 294		CONT. 295	01	



+R07.1

AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656	
01	13 49	FACTORY ASBUILT FOR APPROVAL	DRAWN BY RIZ		CHECKED BY KVR	
00	13 04		DATE STARTED 24.01.2013		DATE COMPLETED _____	
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC	

SPARE CONTACTS	
132kV UGF-SPARE-1 RELAY PANEL-1+R07.1	
S/S 8709-132/13.8KV IN AL-KHARJ CITY	
RIYADH	SAUDI ARABIA

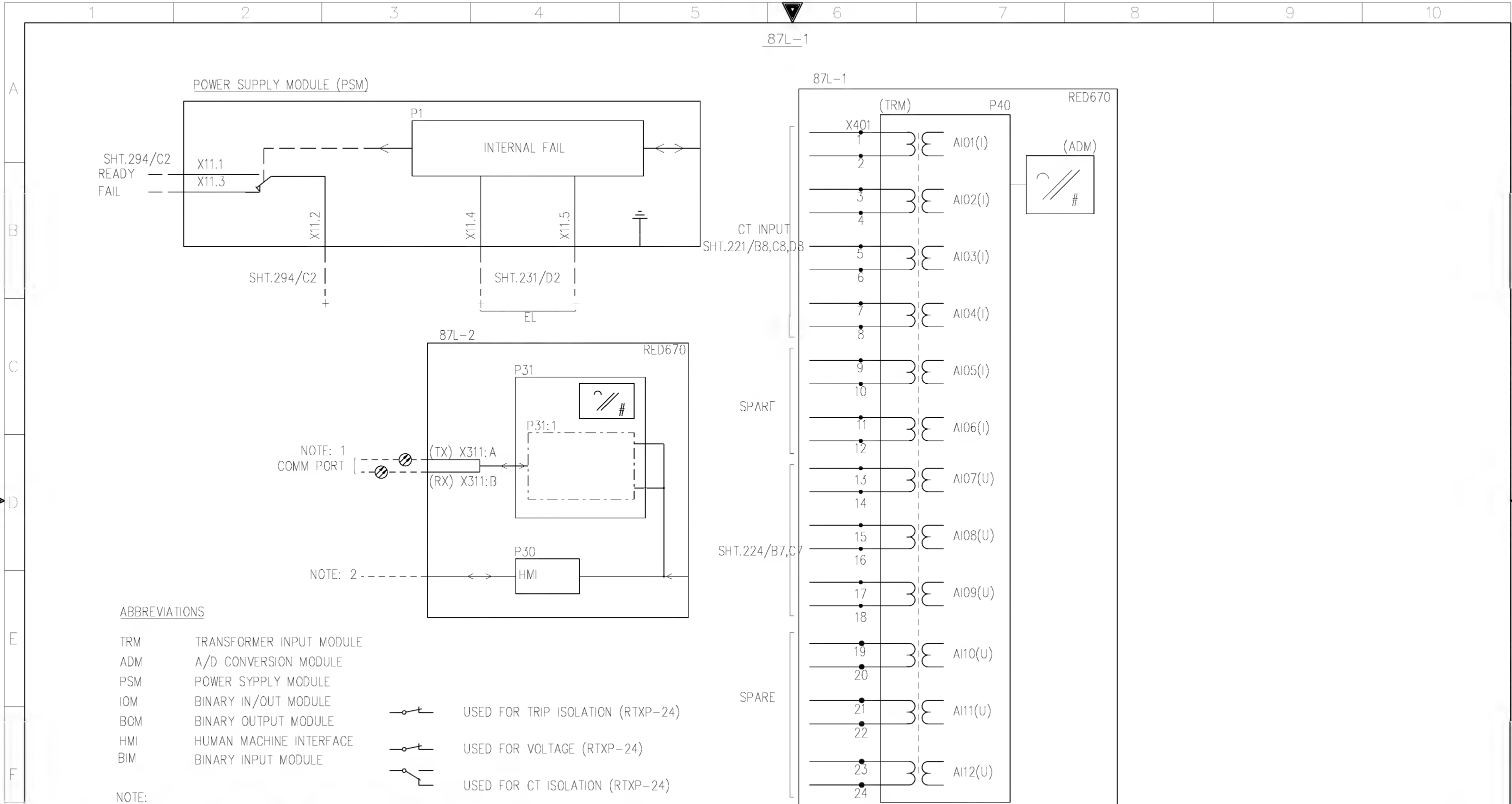
الشركة الوطنية لنقل الكهرباء		نقل الكهرباء		National Grid sa			
INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.			
-	C421	CD-322925		SHT	CONT.		
				295	298		
				REV. NO. 01			


NG/D2-D (2012/01)

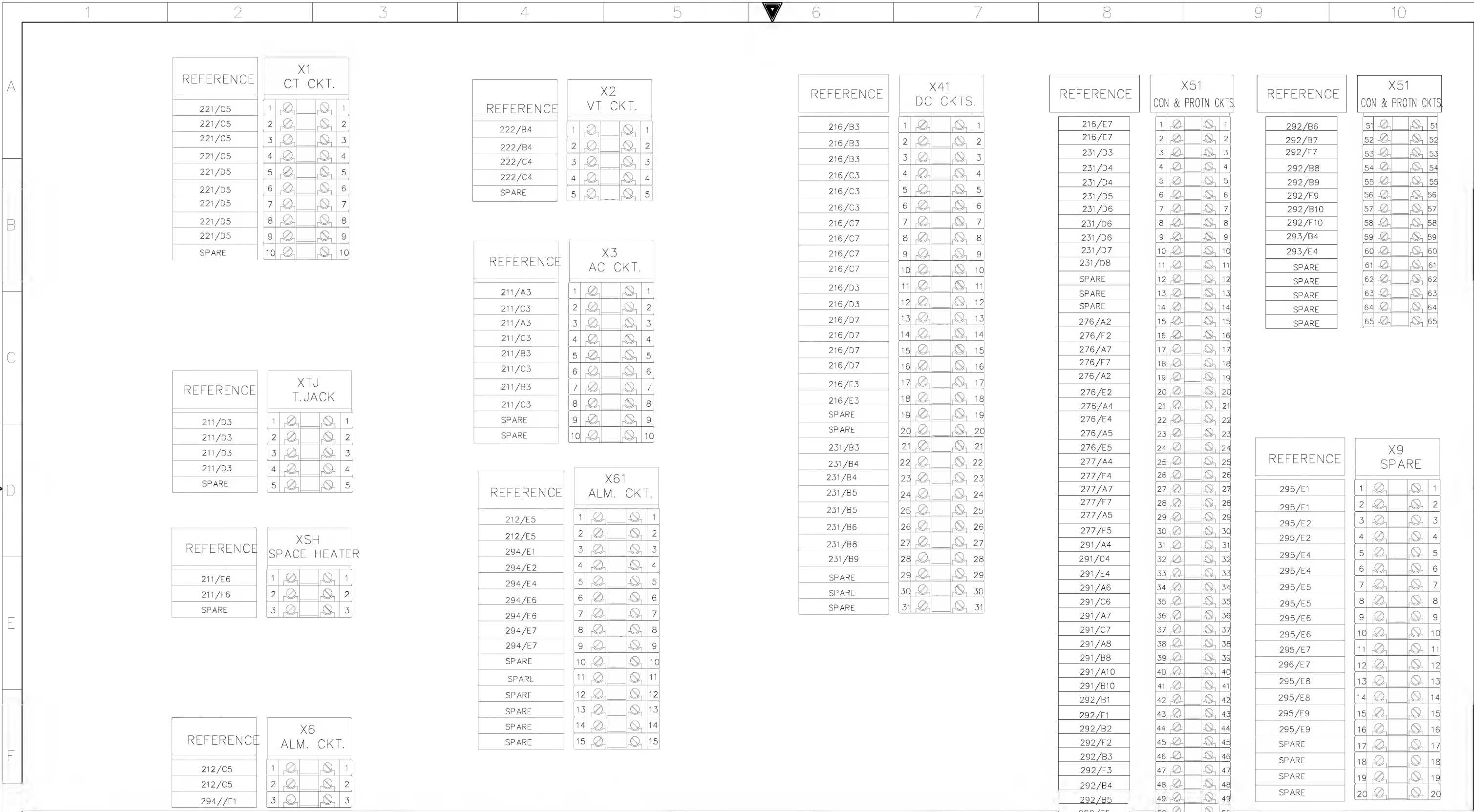
DMS


VECTOR

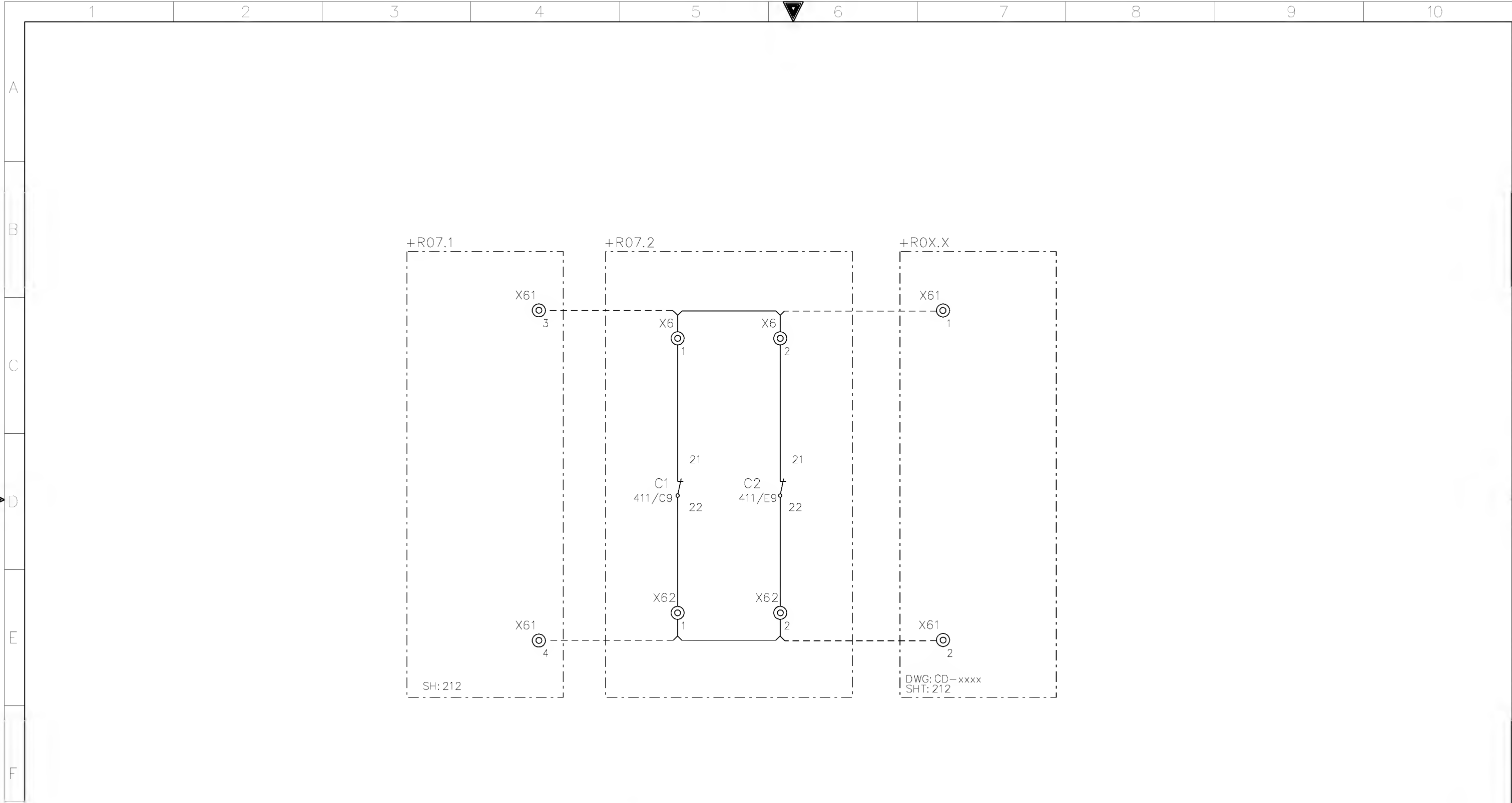
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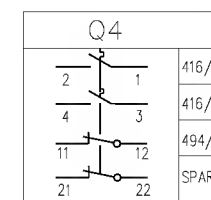
AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		BLOCK REFERENCE		<div>الشركة الوطنية لنقل الكهرباء</div> <div>نقل الكهرباء</div> <div>National Grid sa</div>				
			DRAWN BY <u>RIZ</u> CHECKED BY <u>KVR</u>		132kV UGF-SPARE-1 RELAY PANEL-1+R07.1								
01	13 49	FACTORY ASBUILT	DATE STARTED <u>24.01.2013</u> DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.		REV. NO.
00	13 04	FOR APPROVAL	OPRG. DEPT. <u>CTPD</u> ENG. DEPT. <u>AUT-PSAC</u>		RIYADH SAUDI ARABIA		-	C421	CD-322925		SHT	CONT.	01
REV. NO.	DATE	DESCRIPTION									298	299	



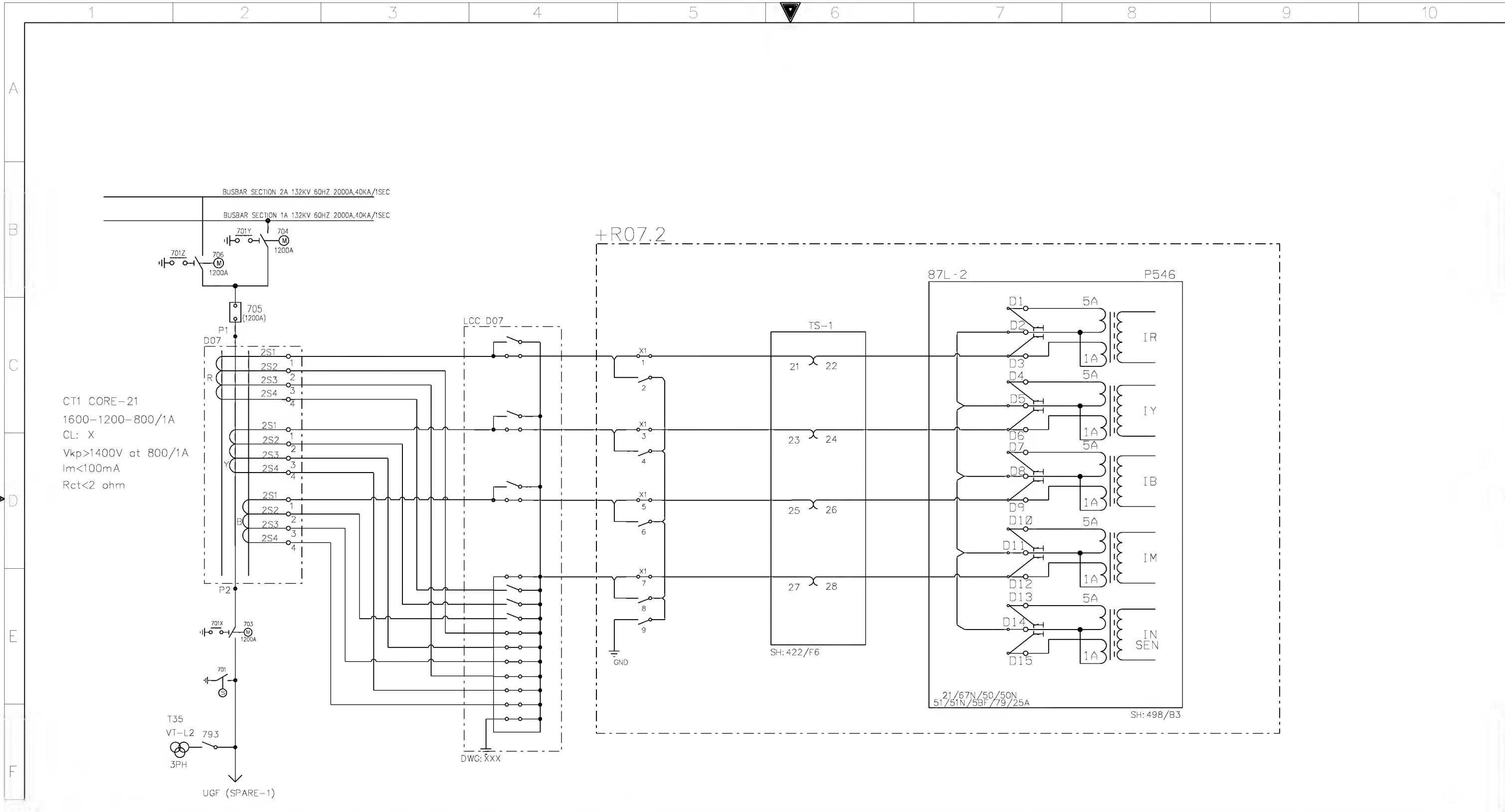
AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		TERMINAL BLOCKS PANEL		<div>الشركة الوطنية لنقل الكهرباء</div> <div>نقل الكهرباء</div> <div>National Grid sa</div>					
G	01	13 49	FACTORY ASBUILT		DRAWN BY RIZ CHECKED BY KVR		132kV UGF-SPARE-1 RELAY PANEL-1+R07.1							
	00	13 04			DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY							
	REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH		SAUDI ARABIA						
							INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.		REV. NO.	
							-	C421	CD-322925		SHT		CONT.	
											701		411	
													01	



G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		AC MCB AUX CONTACTS		<div>الشركة الوطنية لنقل الكهرباء</div> <div>نقل الكهرباء</div> <div>National Grid sa</div>				
							132kV UGF-SPARE-1 RELAY PANEL-2+R07.2						
	01	13 49	FACTORY ASBUILT		DRAWN BY RIZ CHECKED BY KVR		S/S 8709-132/13.8KV IN AL-KHARJ CITY						
	00	13 04	FOR APPROVAL		DATE STARTED 24.01.2013 DATE COMPLETED _____		RIYADH SAUDI ARABIA						
	REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC								
								INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.		REV. NO.
								-	C421	CD-322925	SHT 412	CONT. 416	01



 **شبكة الكهرباء الوطنية**
National Grid of Saudi Arabia

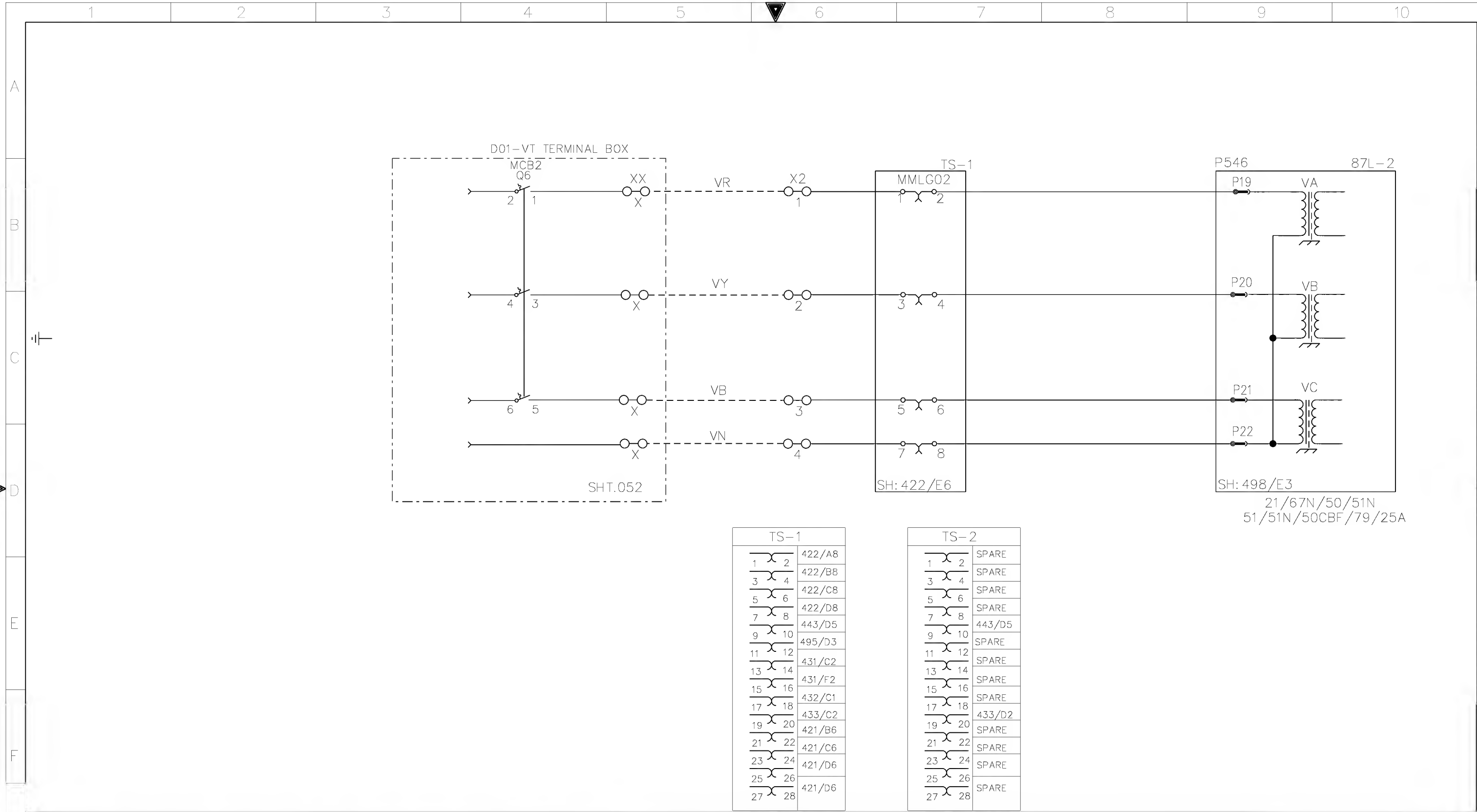


+R07.2

AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656	
01	13 49	FACTORY ASBUILT FOR APPROVAL	DRAWN BY RIZ		CHECKED BY KVR	
00	13 04		DATE STARTED 24.01.2013		DATE COMPLETED _____	
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC	

CURRENT TRANSFORMER INPUTS -87L-2
132kV UGF-SPARE-1 RELAY PANEL-2+R07.2
S/S 8709-132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء				نقل الكهرباء	
				National Grid sa	
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.		REV. NO.
-	C421	CD-322925	SHT	CONT.	01
			421	422	



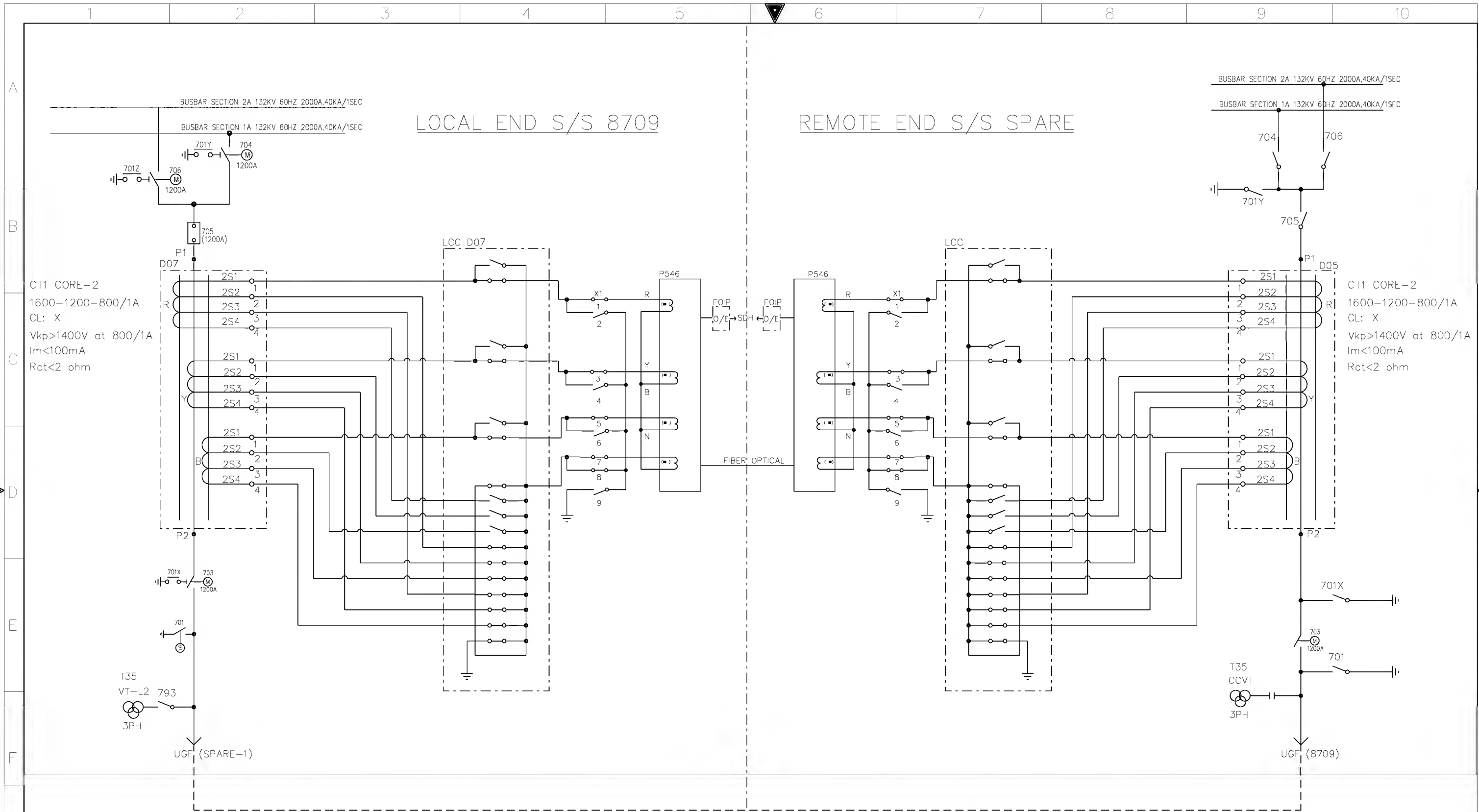
AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

01	13 49	FACTORY ASBUILT	DRAWN BY RIZ	CHECKED BY KVR
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013	DATE COMPLETED
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC

VOLTAGE TRANSFORMER INPUTS -87L-2
132kV UGF-SPARE-1 RELAY PANEL-2+R07.2
S/S 8709-132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء
National Grid sa

INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-322925	422	423

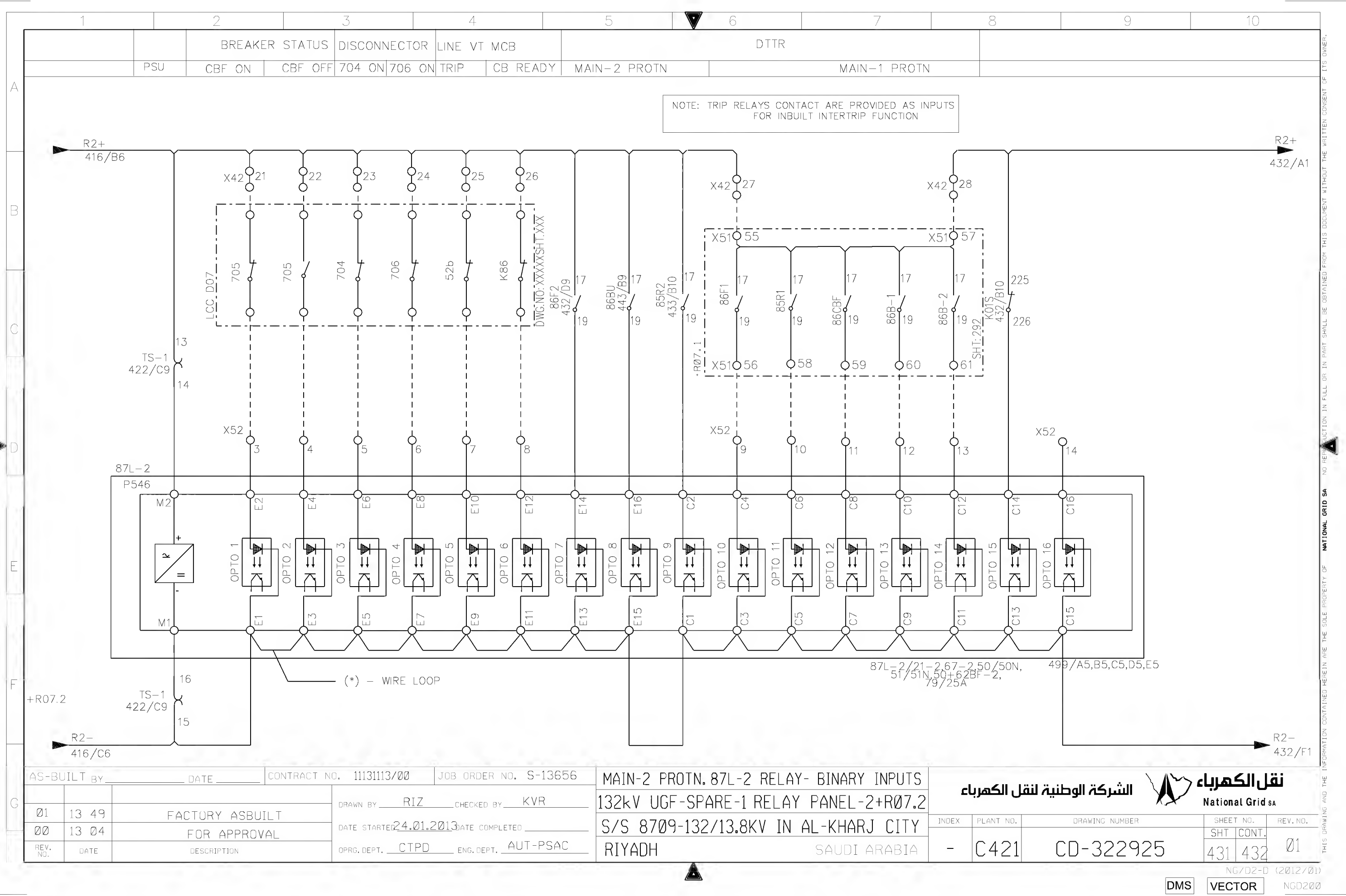


+R07.2

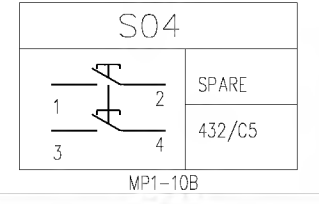
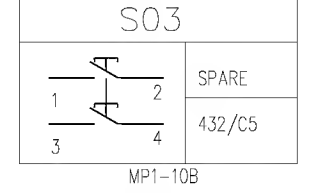
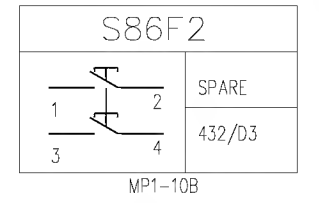
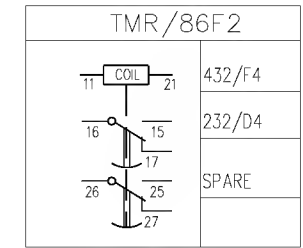
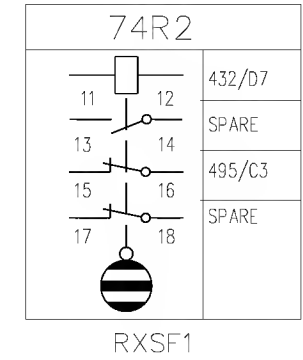
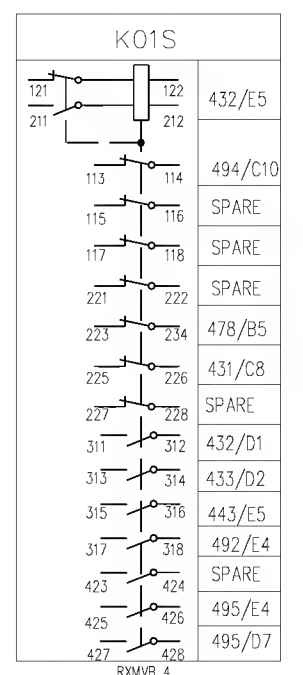
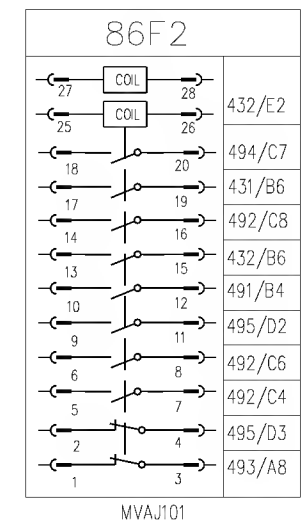
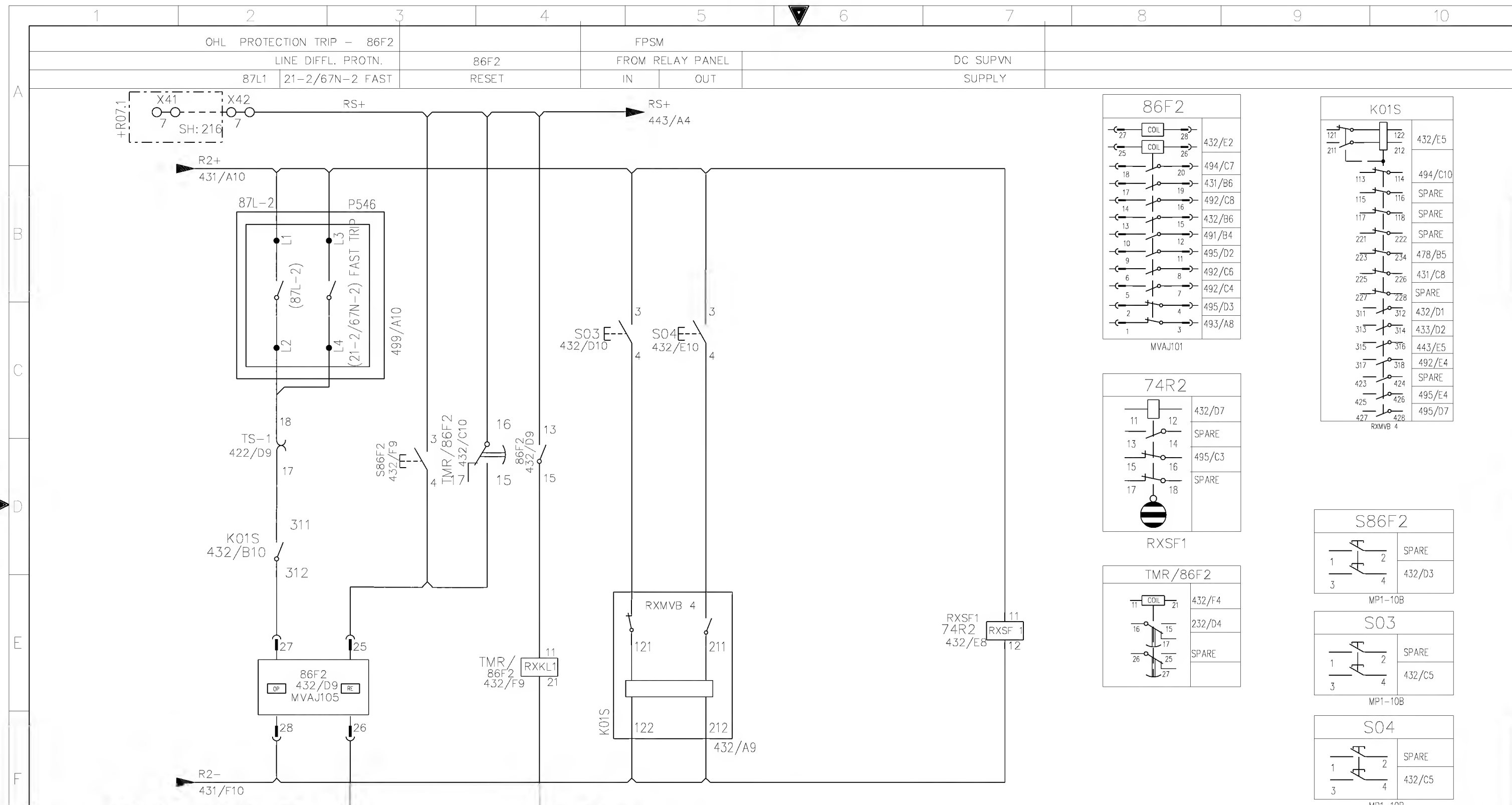
AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656
01	13 49	FACTORY ASBUILT	
00	13 04	FOR APPROVAL	
REV. NO.	DATE	DESCRIPTION	
DRAWN BY RIZ		CHECKED BY KVR	
DATE STARTED 24.01.2013		DATE COMPLETED _____	
OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC	

COMMUNICATION CIRCUITS
132kV UGF-SPARE-1 RELAY PANEL-2+R07.2
S/S 8709-132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء			 نقل الكهرباء National Grid SA		
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.		REV. NO.
-	C421	CD-322925	SHT 423	CONT. 431	01

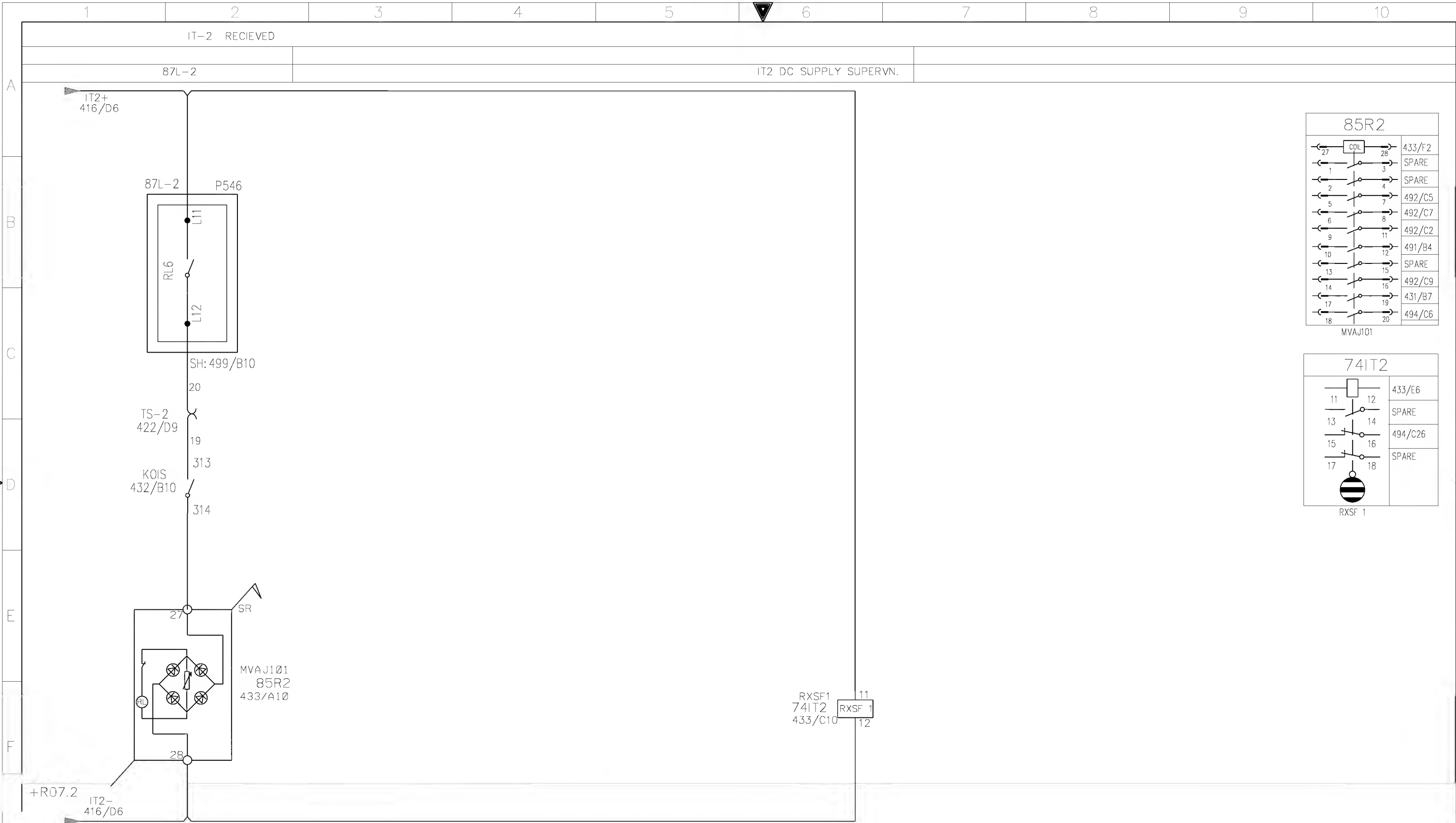


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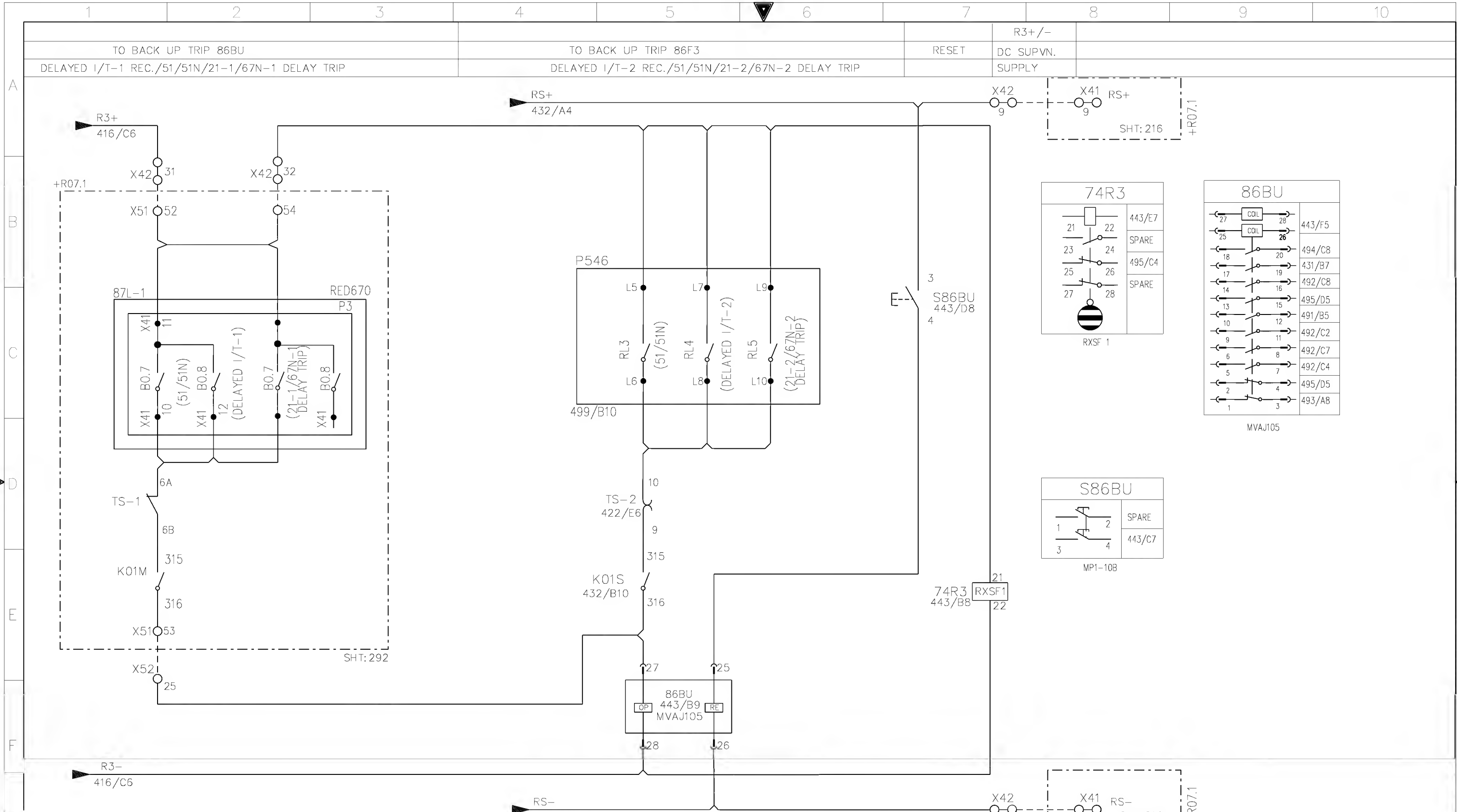


AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		MAIN-2 DISTANCE.PROTECTION TRIP RELAY CKT.		
01 13 49			DRAWN BY RIZ		CHECKED BY KVR		132kV UGF-SPARE-1 RELAY PANEL-2+R07.2		
00 13 04			DATE STARTED 24.01.2013		DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		
REV. NO. DATE DESCRIPTION			OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA		
FACTORY ASBUILT			FOR APPROVAL						

الشركة الوطنية لنقل الكهرباء National Grid sa				
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-322925	SHT CONT.	01
			432	433



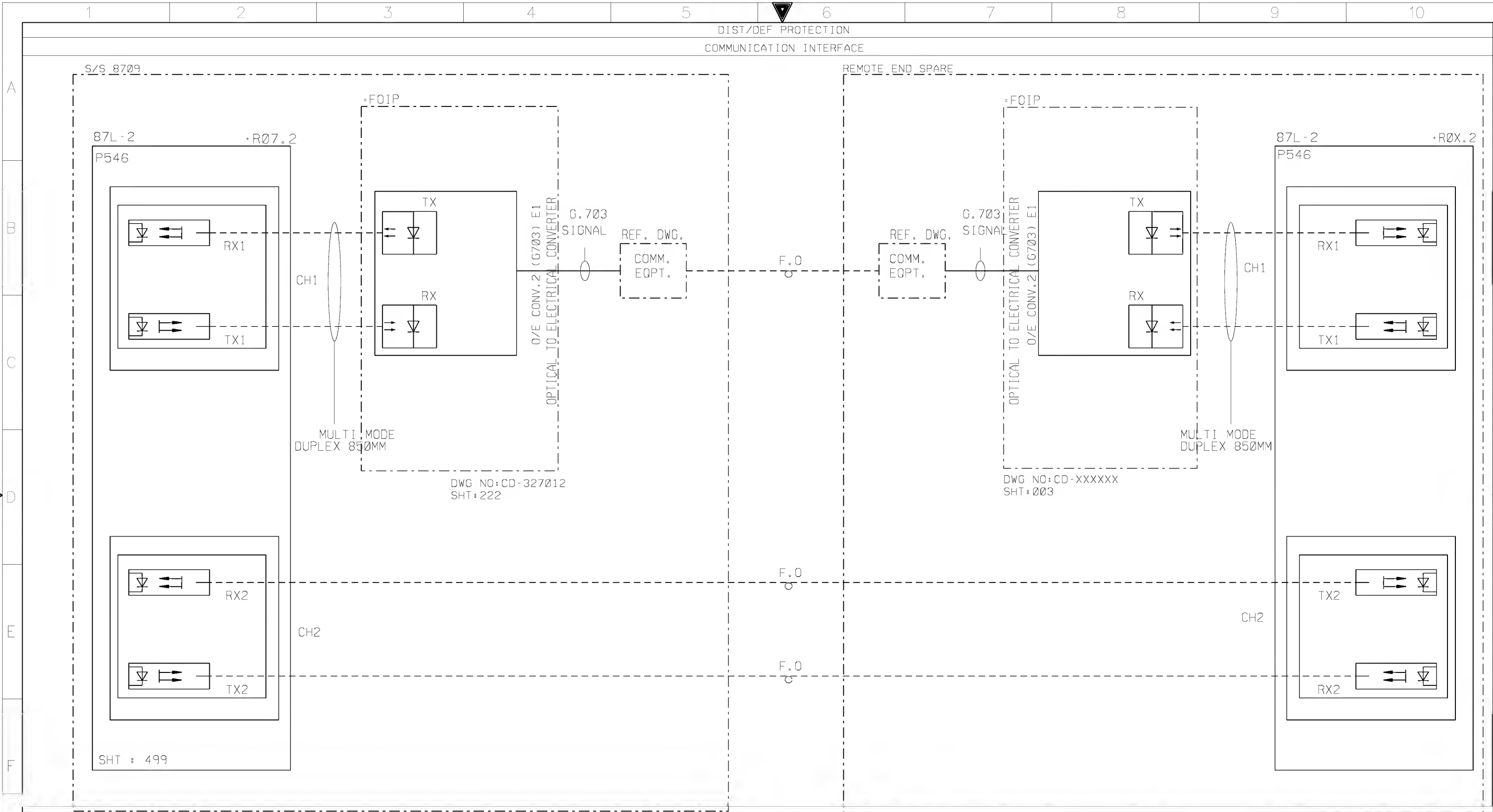
G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		MAIN-2 DISTANCE.PROTECTION TRIP RELAY CKT.		<div>الشركة الوطنية لنقل الكهرباء</div> <div>National Grid sa</div>			
	01	13 49	FACTORY ASBUILT FOR APPROVAL		DRAWN BY RIZ CHECKED BY KVR		132kV UGF-SPARE-1 RELAY PANEL-2+R07.2					
	00	13 04			DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY					
	REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA		-	C421	CD-322925	SHT 433	CONT. 443



AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656	
01	13 49	FACTORY ASBUILT FOR APPROVAL	DRAWN BY RIZ		CHECKED BY KVR	
00	13 04		DATE STARTED 24.01.2013		DATE COMPLETED _____	
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC	

BACKUP PROTECTION TRIP RELAY CIRCUIT
132kV UGF-SPARE-1 RELAY PANEL-2+R07.2
S/S 8709-132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء			 نقل الكهرباء National Grid SA		
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.		REV. NO.
-	C421	CD-322925	SHT	CONT.	01
			443	446	



AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

01	13 49	FACTORY ASBUILT
00	13 04	FOR APPROVAL
REV. NO.	DATE	DESCRIPTION

DRAWN BY	RIZ	CHECKED BY	KVR
DATE STARTED	24.01.2013	DATE COMPLETED	
OPRG. DEPT.	CTPD	ENG. DEPT.	AUT-PSAC

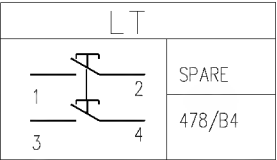
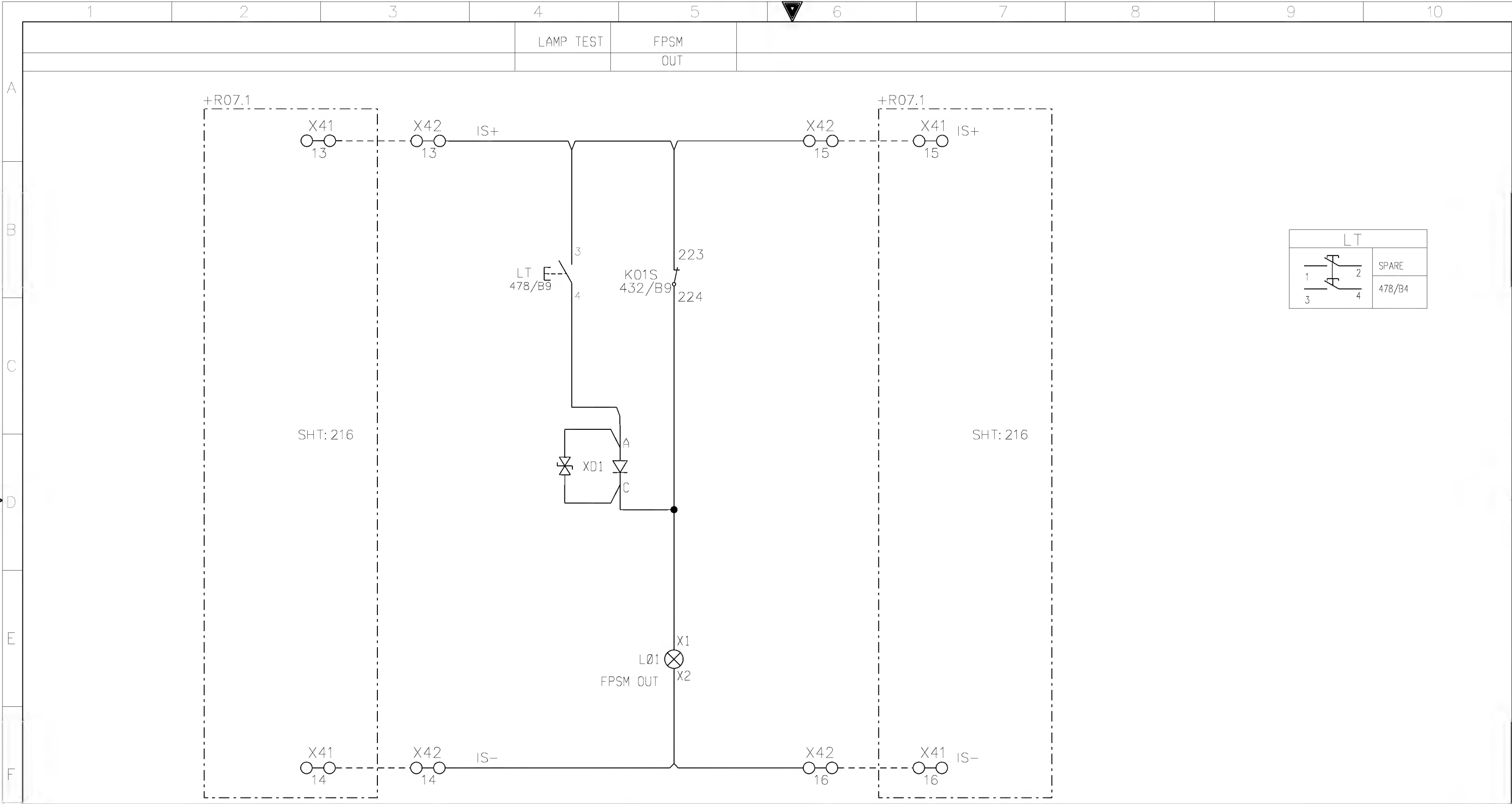
COMMUNICATION INTERFACE

132kV UGF-SPARE-1 RELAY PANEL-2+R07.2

S/S 8709-132/13.8KV IN AL-KHARJ CITY

RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء				نقل الكهرباء	
				National Grid SA	
INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.	
-	C421	CD-322925		SHT	CONT.
				446	478
				REV. NO.	
				01	

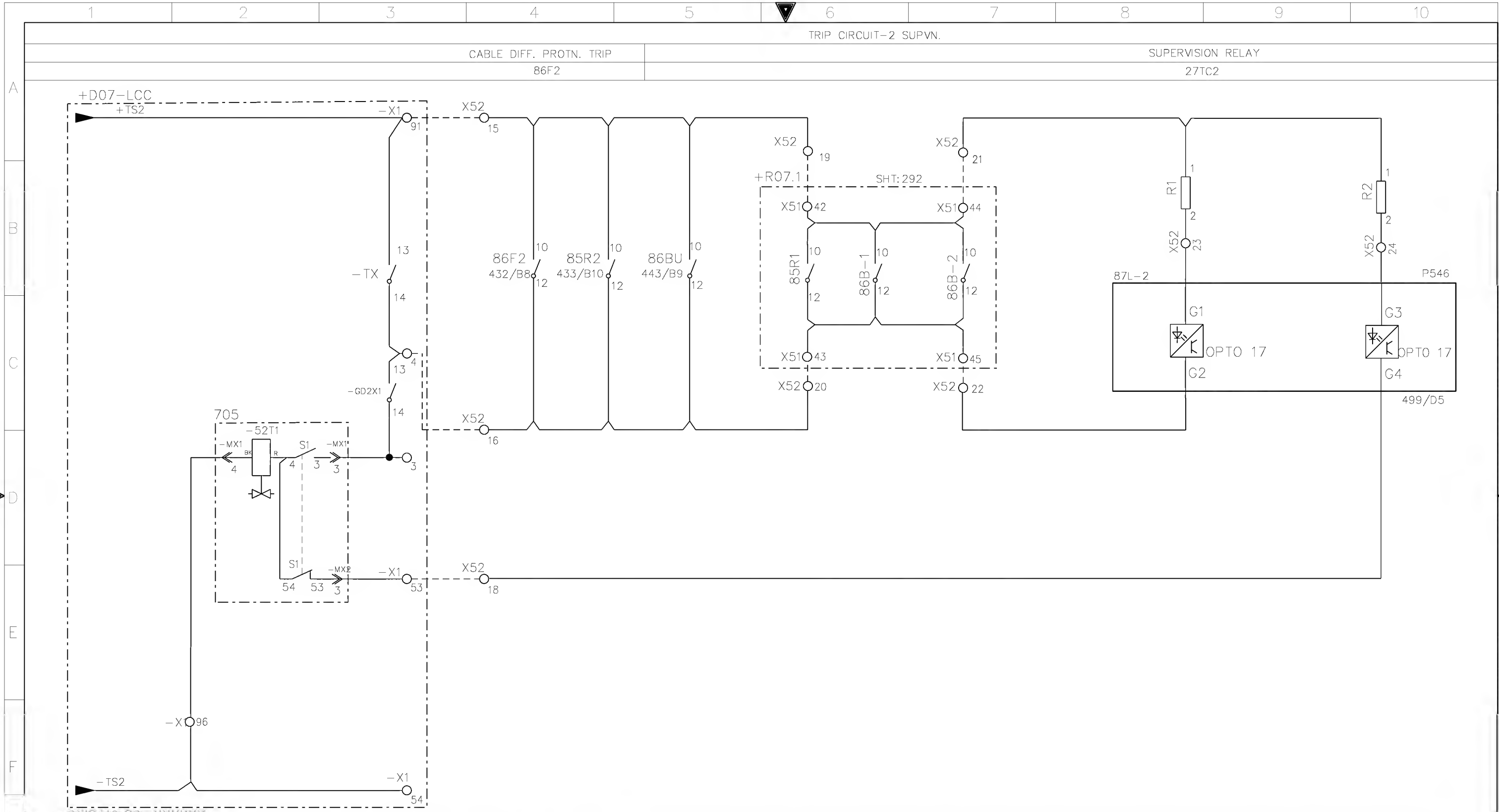


AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

01	13 49	FACTORY ASBUILT	DRAWN BY RIZ	CHECKED BY KVR
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013	DATE COMPLETED
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC

MAIN-2 INDICATION CIRCUIT
132kV UGF-SPARE-1 RELAY PANEL-2+R07.2
S/S 8709-132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء					نقل الكهرباء	
					National Grid sa	
INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.		REV. NO.
	C421	CD-322925		SHT 478	CONT. 491	01



DWG. NO. CD=XXXXXX
SHT. XX

+R07.2

AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

01	13 49	FACTORY ASBUILT	DRAWN BY RIZ	CHECKED BY KVR
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013	DATE COMPLETED
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC

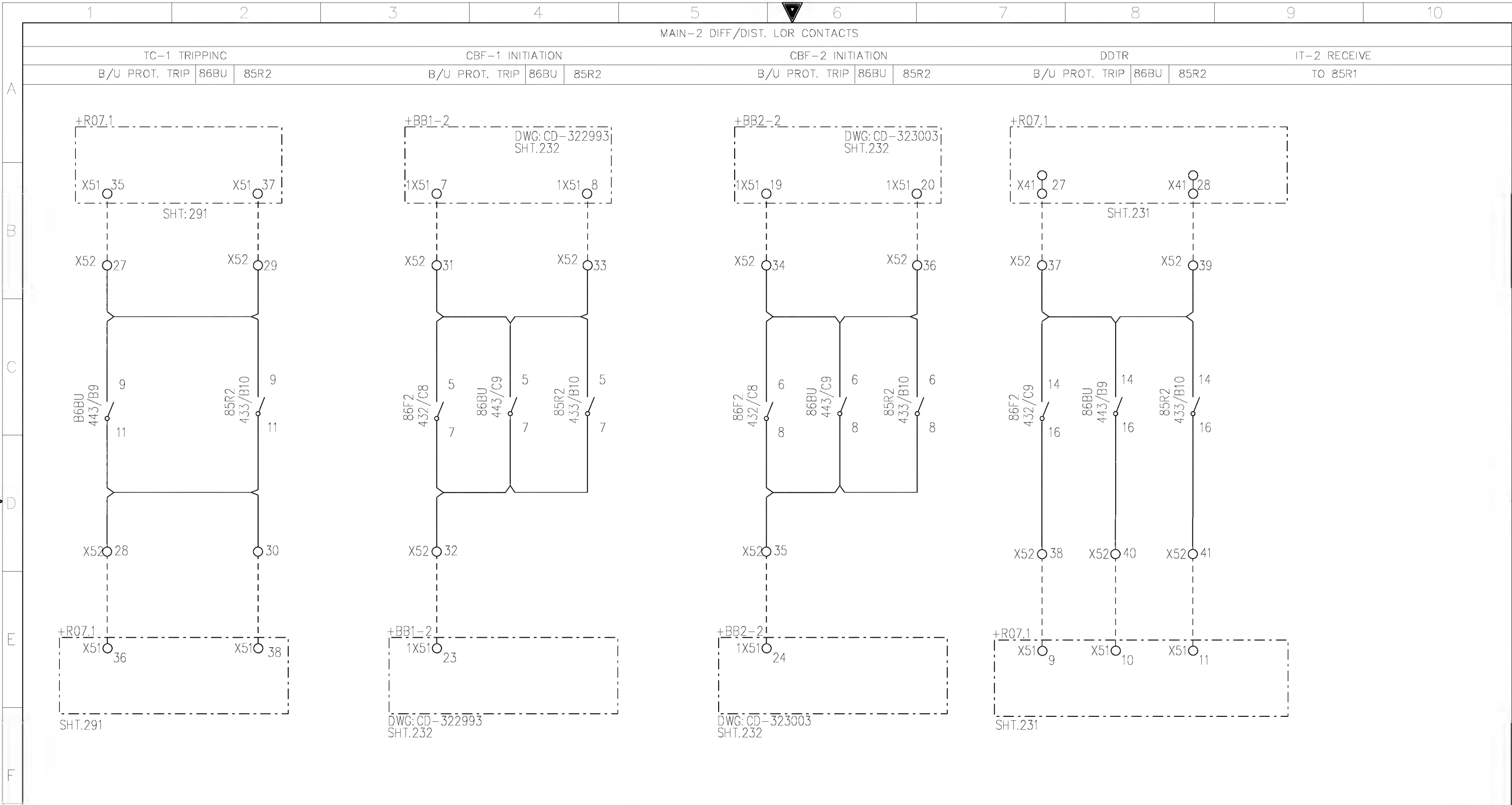
TRIP COIL-2 SUPERVSION CIRCUIT
132kV UGF-SPARE-1 RELAY PANEL-2+R07.2
S/S 8709-132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء
National Grid sa

INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-322925	SHT 491	CONT. 492 01

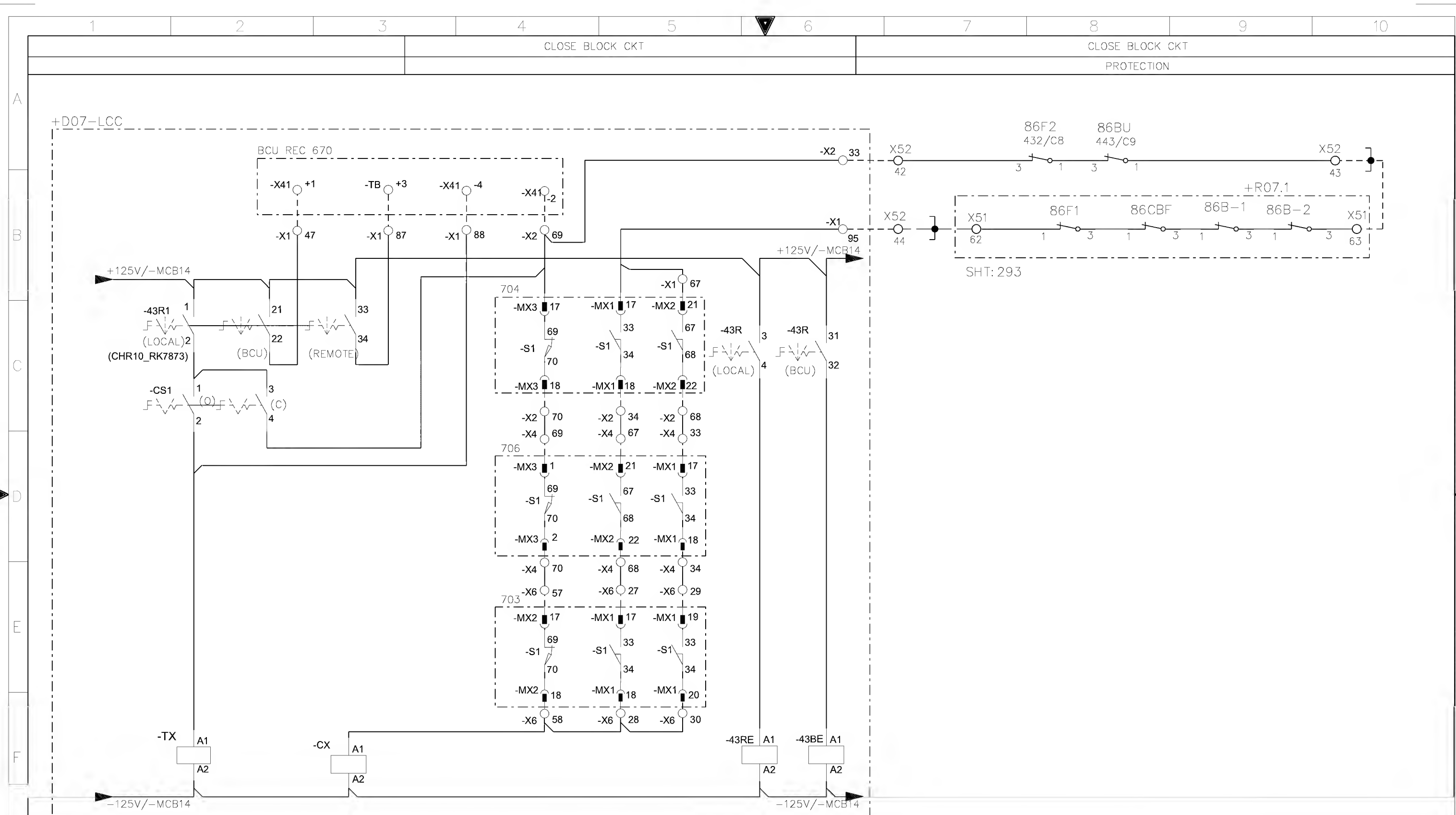
NG/D2-D (2012/01)

DMS VECTOR NGD200



G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		TRIP COIL-1 & CBF INITIATION CONTACTS		<div>الشركة الوطنية لنقل الكهرباء</div> <div>National Grid sa</div>	
	01	13 49	FACTORY ASBUILT		DRAWN BY RIZ CHECKED BY KVR		132kV UGF-SPARE-1 RELAY PANEL-2+R07.2			
	00	13 04	FOR APPROVAL		DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY			
	REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA			

INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.		REV. NO.
-	C421	CD-322925	SHT 492	CONT. 493	01



AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656	
01	13 49	FACTORY ASBUILT FOR APPROVAL	DRAWN BY RIZ		CHECKED BY KVR	
00	13 04		DATE STARTED 24.01.2013		DATE COMPLETED _____	
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC	

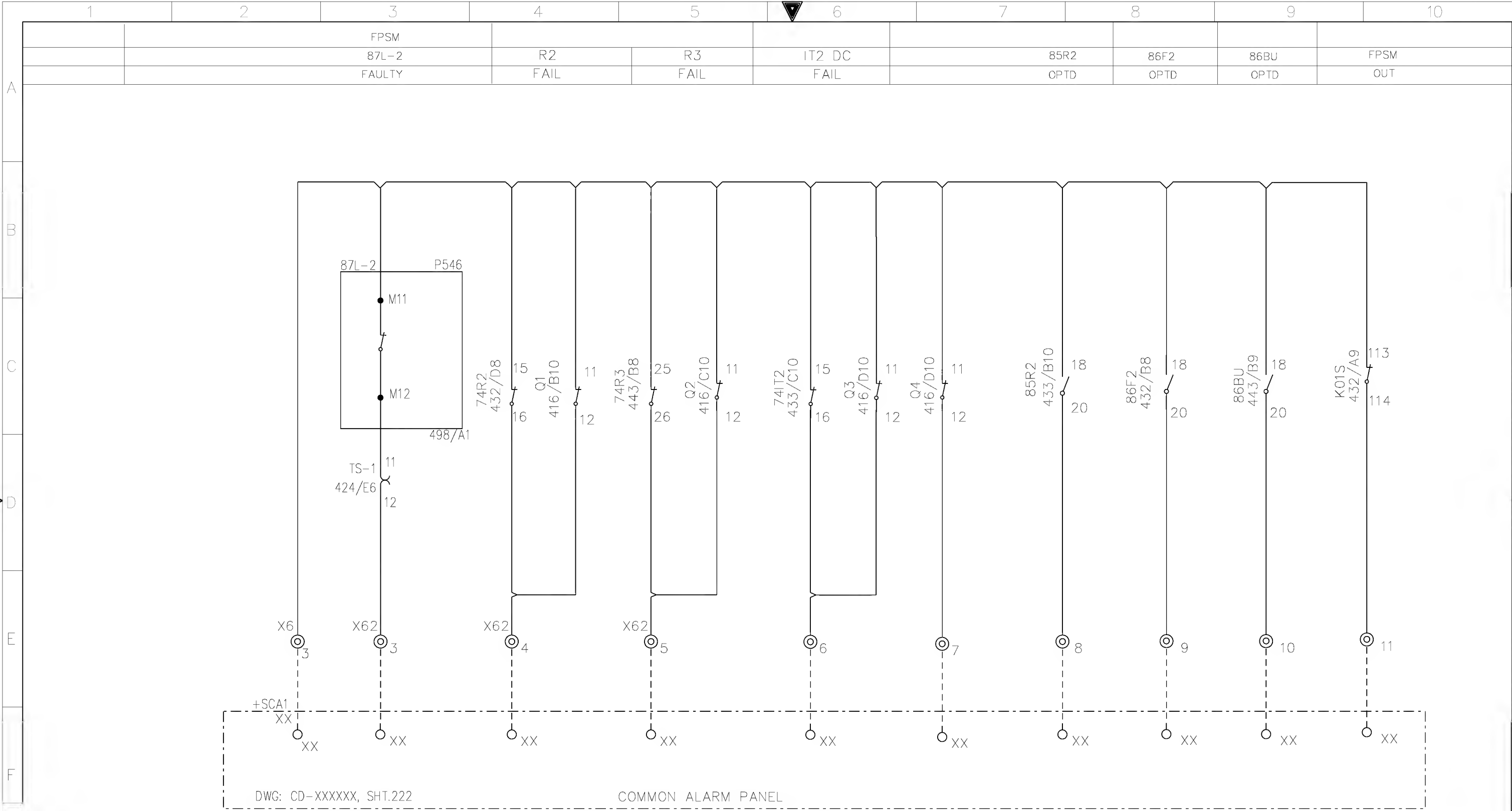
CLOSING CIRCUIT

132kV UGF-SPARE-1 RELAY PANEL-2+R07.2

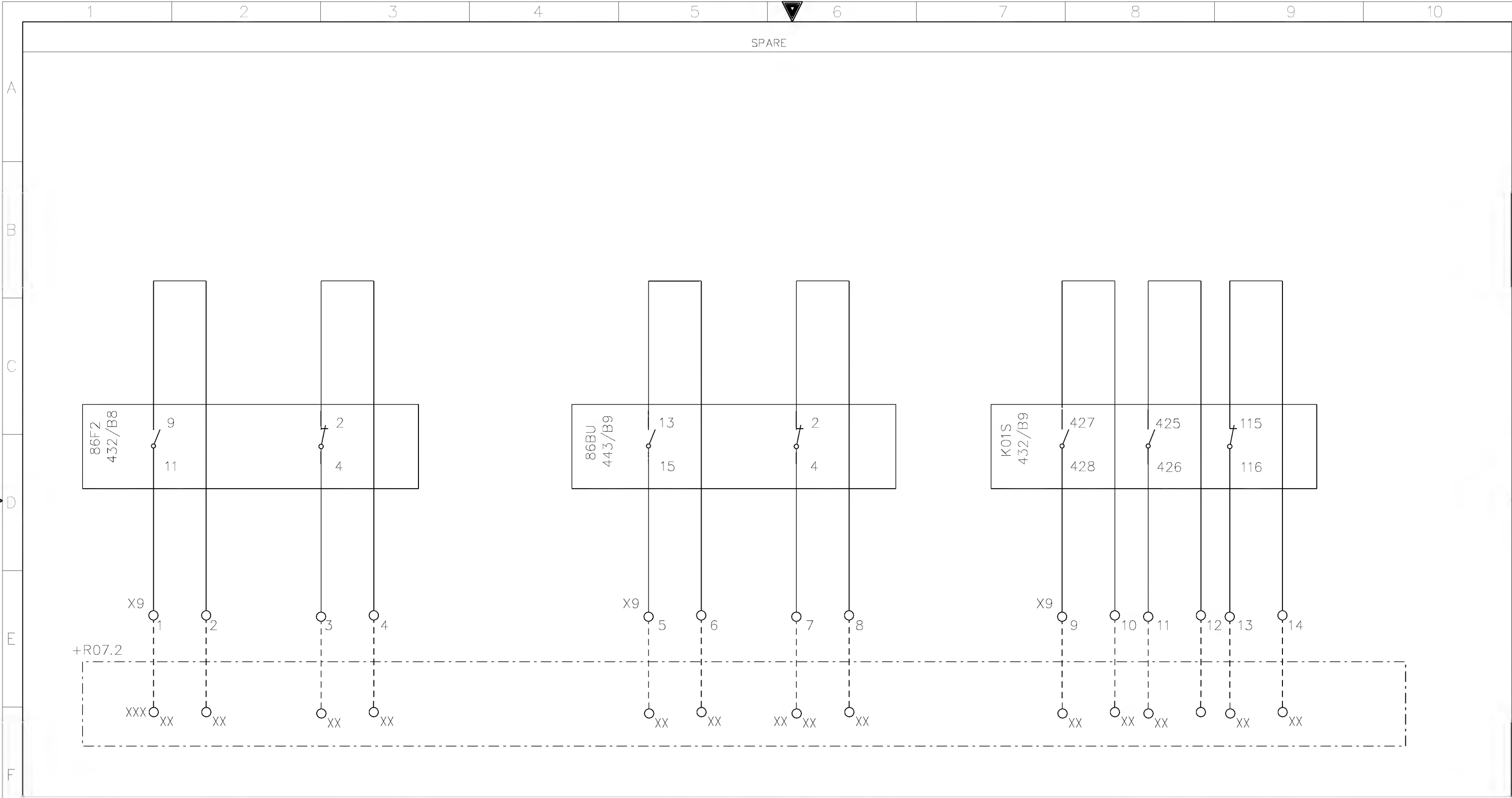
S/S 8709-132/13.8KV IN AL-KHARJ CITY

RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء			 نقل الكهرباء National Grid SA		
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.		REV. NO.
-	C421	CD-322925	SHT	CONT.	01
			493	494	



G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		COMMON ALARM CIRCITS		<div>الشركة الوطنية لنقل الكهرباء</div> <div>نقل الكهرباء</div> <div>National Grid sa</div>				
	01	13 49	FACTORY ASBUILT		DRAWN BY RIZ CHECKED BY KVR		132kV UGF-SPARE-1 RELAY PANEL-2+R07.2						
	00	13 04	FOR APPROVAL		DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY						
	REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA						
								INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.		REV. NO.
								-	C421	CD-322925	SHT 494	CONT. 495	01



A

B

C

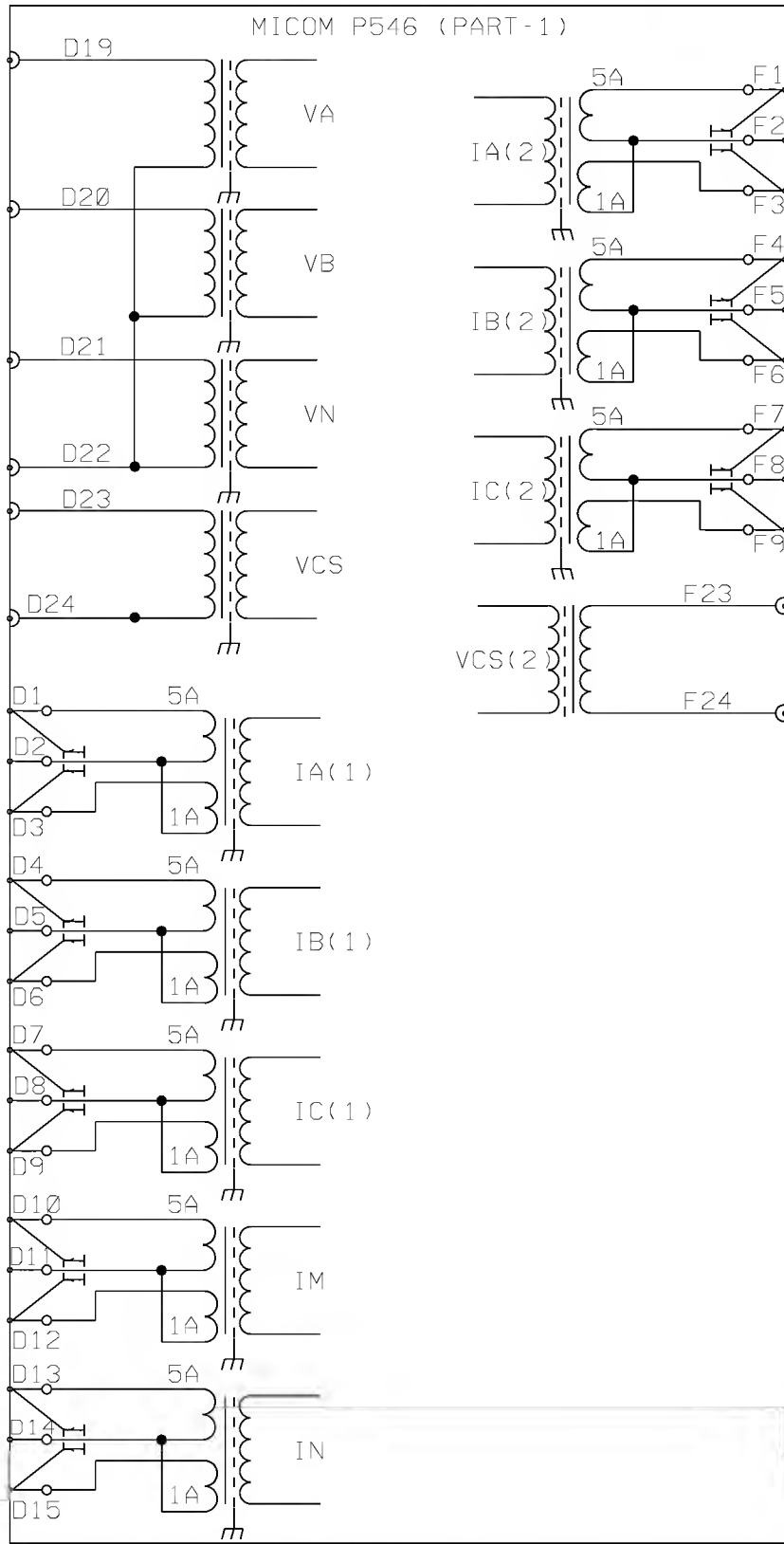
D

E

F

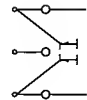
422/B9,C9

421/B8,C8,D8



NOTES:

(A)



C.T SHORTING LINKS

(B)



PIN TERMINAL (P.C.B TYPE)

2. USED FOR SELF PROTECTION, I SENSITIVE SHOULD BE DRIVEN FROM A CORE BALANCE CT WHEN SENSITIVE SETTINGS ARE USED
3. M I INPUT IS FOR OPTIONAL MUTUAL COMPENSATION

AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

01	13 49	FACTORY ASBUILT
00	13 04	FOR APPROVAL
REV. NO.	DATE	DESCRIPTION

DRAWN BY RIZ CHECKED BY KVR

DATE STARTED 24.01.2013 DATE COMPLETED _____

OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC

BLOCK REFERENCE

132kV UGF-SPARE-1 RELAY PANEL-2+R07.2

S/S 8709-132/13.8KV IN AL-KHARJ CITY

RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء National Grid sa				
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	
-	C421	CD-322925	SHT	CONT.
			498	499
				01

	1	2	3	4	5	6	7	8	9	10
A										
B										
C										
D										
E										
F										

REFERENCE	X1 CT CKT.
421/C5	1
421/C5	2
421/C5	3
421/C5	4
421/D5	5
421/D5	6
421/D5	7
421/D5	8
421/E5	9
SPARE	10

REFERENCE	XTJ T.JACK
411/C3	1
411/C3	2
411/D3	3
411/D3	4
SPARE	5

REFERENCE	XSH SPACE HEATER
411/E6	1
411/F6	2
SPARE	3

REFERENCE	X6 ALM. CKT.
412/C5	1
412/C5	2
495/E2	3

REFERENCE	X2 VT CKT.
422/B6	1
422/B6	2
422/C6	3
422/C6	4
SPARE	5

REFERENCE	X3 AC CKT.
411/A3	1
411/B3	2
411/A3	3
411/C3	4
411/B3	5
411/C3	6
411/B3	7
411/C3	8
SPARE	9
SPARE	10

REFERENCE	X62 ALM. CKT.
412/E5	1
412/E5	2
494/E3	3
494/E4	4
494/E5	5
494/E6	6
494/E7	7
494/E8	8
SPARE	9
SPARE	10
SPARE	11
SPARE	12
SPARE	13
SPARE	14
SPARE	15

REFERENCE	X42 DC CKTS.
416/B3	1
416/B3	2
416/B3	3
416/C3	4
416/C3	5
416/C3	6
432/A2	7
432/F2	8
443/A4	9
443/F4	10
SPARE	11
SPARE	12
478/B3	13
478/E3	14
478/B8	15
478/E8	16
416/E3	17
416/E3	18
SPARE	19
SPARE	20
431/B3	21
431/B4	22
431/B4	23
431/B5	24
431/B5	25
431/B6	26
431/B8	27
431/B9	28
SPARE	29
SPARE	30
443/A2	31

REFERENCE	X52 CONTROL & PROTIN CKTS.
416/F7	1
416/F7	2
431/D4	3
431/D4	4
431/D5	5
431/D6	6
431/D6	7
431/D7	8
431/D8	9
431/D8	10
432/C4	11
432/C4	12
443/F2	13
SPARE	14
491/A4	15
491/C4	16
491/E4	17
491/A6	18
491/C6	19
491/A7	20
491/C7	21
491/A8	22
491/B8	23
491/A10	24
443/B10	25
SPARE	26
492/B2	27
492/D2	28
492/B3	29
492/D3	30
492/B4	31
492/D4	32
492/B5	33
492/B6	34
492/D6	35
492/B7	36
492/B8	37
492/D8	38
492/B9	39
492/D9	40
492/A7	41
492/A10	42
492/B7	43
SPARE	44
SPARE	45
SPARE	46
SPARE	47
SPARE	48
SPARE	49
SPARE	50

REFERENCE	X9 SPARE
495/E1	1
495/E2	2
495/E3	3
495/E3	4
495/E5	5
495/E5	6
495/E6	7
495/E6	8
495/E7	9
495/E8	10
495/E8	11
495/E8	12
495/E9	13
495/E9	14
SPARE	15
SPARE	16
SPARE	17
SPARE	18
SPARE	19
SPARE	20
SPARE	21
SPARE	22
SPARE	23
SPARE	24
SPARE	25

AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

01	13 49	FACTORY ASBUILT	DRAWN BY RIZ	CHECKED BY KVR
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013	DATE COMPLETED
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC

TERMINAL BLOCKS PANEL
132kV UGF-SPARE-1 RELAY PANEL-2+R07.2
S/S 8709-132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء		National Grid sa		
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-322925	501	01